

CACTUS AND SUCCULENT JOURNAL

VOL. XXX MARCH-APRIL, 1958 No. 2



FIG. 18. *Mammillaria rekoii* flowered by Marjorie Shields
in New Zealand (see pg. 49)



CACTUS AND SUCCULENT JOURNAL

Published and owned by the Cactus and Succulent Society of America, Inc., 132 W. Union St., Pasadena, Calif. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$4.00 per year; foreign \$4.00 by money order. Mail application to SCOTT HASELTON, Editor, 132 West Union Street, Pasadena 1, California. Editorial Staff: THE ENTIRE SOCIETY. Entered as second Class Matter at Pasadena, Calif., under act of March 3, 1879. Published bi-monthly. We reserve the right to accept or reject advertising or articles sent to this JOURNAL.

VOL. XXX

MARCH-APRIL, 1958 (Price 75¢)

No. 2

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KALANCHOES

We would like to contact someone who is working scientifically with Kalanchoes. Please contact your Editor, 132 W. Union St., Pasadena, California.

NEW CATALOG

Johnson Cactus Gardens, Paramount, California, announce their 1958 "Succulent Parade" catalog. There are 250 pictures and many in color. There are many new items listed and beginners will delight in the common names. Without a doubt, Johnson Cactus Gardens have contributed more to the interest of succulents than all the other dealers combined and the catalog itself, no doubt, will gain many new collectors and hobbyists.

NEW JAPANESE PUBLICATION

The following editorial will explain its purpose. This will be of interest to English speaking readers because most of the articles are summarized in English. Subscriptions are \$2.50. Send direct to Mr. Hajime Oku, 86 Horinouchi, Toshima-ku, Tokyo, Japan.

EDITORIAL: "There are three Journals devoted to Cacti & Succulents now being published in Japan. SYABOTEN (bi-monthly : by Syaboten-Sha), CACTUS (bi-monthly : by The Cactus & Succulent Society of Japan) and The Study of Cacti (bi-monthly : by Desert Plant Society of Japan). Those three Journals are having their individual tradition as well as ardent subscribers.

"SUCCULENTARUM JAPONIA" is going to join from now on but Japanese amateur cactophiles are so diligent and desirous to absorb newer knowledges that we believe the entire four JOURNALS can still be able to increase their subscribers by their respective characteristics.

The publication of SUCCULENTARUM JAPONIA is intending to inform to overseas subscribers the result of researches in this field as well as the recent movement in Japan and simultaneously intending to enlighten those Japanese who are interested in Succulent Plants fresh knowledge of foreign countries.

The first issue is specializing to "Variegated Plants in Japan" Japanese people are peculiarly fond of variegated plants in the world of PLANTS and there are many people among cactophiles who entertain special affection

to cactus and other succulents of variegated form.

Among those variegated species *Gymnocalycium mihanovichii* v. *friedrichiae* f. *roseovariegata* hort has been most welcomed by special collectors because of the fascinating pure red body.

However, it is not true every Japanese people love variegated plants. Most of Japanese cactophiles are fond of cacti and succulent plants in their natural color and form but there are some people who entertain enthusiastic affection towards those variegated plants. Variegated plants, especially red-variegated plants are rather difficult for the propagation and therefore rare and costly."

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NEW ZEALAND SEASONS

Early Spring.....	August	} Spring
Mid Spring.....	September	
Late Spring.....	October	
Early Summer.....	November	} Summer
Mid Summer.....	December	
Late Summer.....	January	
Early Autumn.....	February	} Autumn
Mid Autumn.....	March	
Late Autumn.....	April	
Early Winter.....	May	} Winter
Mid Winter.....	June	
Late Winter.....	July	

By MYRON KIMNACH

Werckleocereus tonduzii (Weber) Britton & Rose was first discovered in Costa Rica in 1898 by A. Tonduz. In 1902 it was published by Weber² as a *Cereus*, with Tonduz 1915 as the type (apparently deposited at Paris [P]), but the flower was known only from persistent remains attached to a fruit. In 1909 Britton and Rose,³ having seen live specimens in flower, published the genus *Werckleocereus* with this species as the type.

The type collection by Tonduz was from El Copey, 1800 to 2900 meters altitude, near Santa Maria de Dota, Province of San José. Standley⁴ remarked that the species was apparently known only from the vicinity of El Copey. Two collections from this area were made by C. Horich, who also collected what is probably this species about 45 km. S. E. of El Copey, near the Río Chirripó, Province of Limón; these collections, cited below, are being grown at Berkeley. Mr. Horich believes he has also found the species at Tarbaca, near the headwaters of the Río Jorco, Province of San José, some 30 km. N. W. of the type locality.

According to Weber, Tonduz mentioned that the species was the commonest *Cereus* (*sensu lato*) at El Copey, and that it grew on the ground or climbed into large trees, in which it "attained phenomenal dimensions." The plant collected by Horich along the Río Chirripó grew pendently from the trunks of large trees, and his collections from the vicinity of El Copey also were epiphytic; one of them (U.C.B.G. 57.094) was also lithophytic.

Mr. Horich informs us that the Río Parrita area, which includes El Copey, "is a part of the cool, but relatively dry, western descent (Pacific watershed) of the Cordillera de Talamanca. The epiphytic flora of El Copey is very limited and restricted mainly to xerophytic plants such as *Epidendrum* [Orchidaceae]. The entire Río Parrita valley is becoming so deforested for lumber that *W. tonduzii* will soon disappear there, despite its present commonness in the remaining forests."

According to Horich, the inhabitants of

El Copey call the species "Flor de Bailarina" (flower of the dancing-girl), "Hoja de Piedra" (stone-leaf, due to the hard, thick stems which are mistaken for leaves), "Tuna" and "Pitahaya," the last two names being applied throughout Spanish America to many cacti with edible fruit. However, it is not known whether the rather tasteless fruit of *W. tonduzii* is ever eaten.

Although the Horich collections are almost certainly this species, none have yet flowered in Berkeley; our description and drawings are based on a plant sent to us by C. H. Lankester of Cartago, Costa Rica.

Werckleocereus tonduzii (Weber) Britton & Rose, Contr. U. S. Nat. Herb. 12: 432, 1909.

Cereus tonduzii Weber, Bull. Mus. Hist. Nat. Paris 8: 459, 1902.

Plant climbing, repent or pendent; stems branching subapically or laterally, the segments 10 cm. to 4 dm. long or more, the lower 1 to 4 cm. terete, 0.5 to 1.5 cm. thick, with 3 rows of areoles, 3-angled above (sometimes 4-angled, *vide* Weber), ca. 3 (1 to 5) cm. wide, the faces concave, sometimes flattened on one side, especially when touching a surface, the epidermis light green, non-glaucous, the lobes 1 to 3 cm. apart, highest just below areoles, the ridge sub-obtuse, the leaves deltoid with concave margins, fleshy, 1 mm. long or less, the wool-mass whitish to blackish, ca. 2 mm. wide, the spines 1 or 2, sometimes lacking, conical to acicular, up to 2 mm. long, brownish; aerial roots copious, along center of faces.

Flowers from nearly all subapical areoles, single, the tube nearly straight on flowers from areoles facing upwards, otherwise upcurved, funnellform, 7 to 8 cm. long, the limb 4 to 5 cm. wide, the outer tepals greenish yellow, the inner white, slightly exceeding, or exceeded by, the stamens and pistil; pericarpel up to 2 cm. long and 1.5 cm. wide, the entire receptacle 5 to 6 cm. long, 12 to 14 mm. wide at middle, ca. 2.5 cm. wide at apex, green, the podaria obtuse, 1 mm. high or less, 30 to 40 on pericarpel, here ca. 3 mm. apart and hardly decurrent, the remainder more conspicuously decurrent, ca. 1 cm. apart and up to 8 mm. wide, the bracteoles deltoid, green with a minute reddish cusp, the lower ones ca. 1 mm. long and wide, the uppermost ones fleshier and up to 5 mm. long and wide, each subtending and appressed to a hemispherical

¹University of California Botanical Garden, Berkeley, Contribution Number 149.

²Bull. Mus. Hist. Nat. Paris 8: 459, 1902.

³Contr. U. S. Nat. Herb. 12: 432, 1909.

⁴Flora of Costa Rica, Field Mus. Nat. Hist.—Bot. 18: 751, 1938.



FIG. 19

Werckleocereus tonduzii (Web.) Britt. & Rose, U.C.B.G. 52.1079. 1. Sterile and flowering stem-apices, with flowers, x 1. 2. Cross-section of stem with aerial root, x 1. 3. Stem-leaf, areole-wool and spine, greatly enlarged. 4. Flower, apical view, x 1. 5. Flower, longitudinal section, x 1. 6. Stigma, x 5. 7. Nectary-chamber and staminal insertion, x 2. 8. Funicles and ovules, greatly enlarged. Drawing by Mrs. M. Blos, 1957.

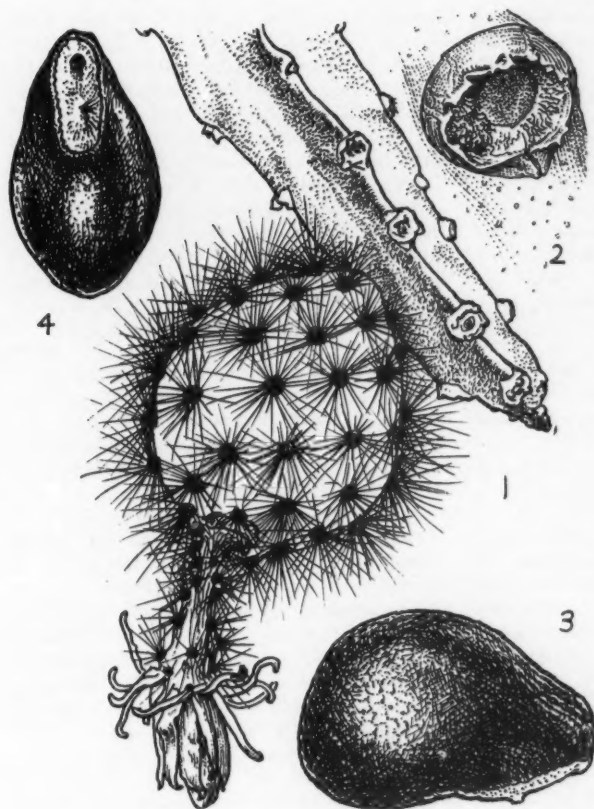


FIG. 20

Werckleocereus tonduzii (Web.)
Britt. & Rose, U.C.B.G. 52.1079.
1. Stem-apex with fruit, x 1. 2.
Stem-areole after flower has fallen,
greatly enlarged. 3, 4. Seed, x 20.
Drawing by Mrs. M. Bloss, 1957.

mass of brownish black wool 1 to 2 mm. wide, each areole with 5 to 18 spines, these radiating in all directions, acicular, pungent, the lower ones 1 to 6 mm. long, the remainder up to 9 mm. long, light to dark brown; outer tepals ca. 25, the outermost recurved with upcurved apices, the upper ones spreading to suberect, 5 to 22 mm. long, 3 to 6 mm. wide, linear-lanceolate to suboblong, strongly concave on inner face, fleshy, obtuse, minutely mucronate or dentate near and at apex, the lower ones yellowish green with maroon apices, the upper ones yellowish and less fleshy, the inner tepals ca. 18, expanding, oblong, the apices obtuse and incised-dentate, 18 to 23 mm. long, 7 to 11 mm. wide, thin, slightly concave on inner face, creamy; ovule-chamber subglobose, ca. 5 mm. in diameter, funicles branched, fimbriate along inner side of curve; nectary-chamber oblong, ca. 1.5 cm. long, ca. 5 mm. wide, filled with nearly odorless nectar, the nectaries yellowish; stamens radiate on erect flowers, otherwise declinate, those of the throat-circle less so, cream on upper half, greenish below, nearly all inserted in two zones, the lower

one ca. 1 cm. long, beginning 3 mm. above apices of nectaries, the filaments 2.5 to 3.5 cm. long, the upper zone a single row of stamens at the tube-mouth with filaments ca. 2 cm. long, the anthers 1 to 2 mm. long, yellow; style 4.5 to 5 cm. long, 1.5 to 2 mm. thick, cream, the lobes 9 to 12, unexpanding, cream, everywhere papillose.

Fruit subglobose, ca. 4 cm. in diameter, the epidermis at first light green with whitish spots, finally yellow, the podaria and bracteoles nearly lacking, the areoles ca. 50 (over 100, *vide* Weber), ca. 1 cm. apart, containing a light brown wool-mass 3 mm. wide and high, the spines ca. 60 (ca. 30, *vide* Weber) to an areole, 10 (4 to 12) mm. long, dark brown on apical half, lighter below, radiating in all directions, acicular, pungent, the dried floral remains ca. 4 cm. long, brownish white; pericarp 1 mm. thick; pulp odorless, nearly tasteless, cream.

Seeds obovate or subreniform, 1.5 to 2.25 mm. long, 1 to 1.5 mm. wide, ca. 1 mm. thick at end opposite hilum, the testa brownish black, shiny, slightly keeled on one side near hilum, the cells

protruding near hilar end, elsewhere flattened, the hilum ca. 0.75 mm. long, oblong, not depressed, gray-brown.

Costa Rica. Province of San José: Vicinity of Santa Maria de Dota, 1500-1800 m., Standley and Valerio 43199, Dec. 26, 1925 to Jan. 3, 1926 (US 1253134); 400 m. from Santa Maria de Dota, along the Río Parrita, 1500 m., leg. C. K. Horich, *University of California Botanical Garden* 57.093 (UC, US); Pacific coast, General Valley, leg. C. H. Lankester, *U.C.B.G.* 52.1079 (UC, US); near Santa Clara del Copey (El Copey), over 1800 m., leg. C. K. Horich, *U.C.B.G.* 57.094 (UC, US). Province of Limón, in

the southwest, along the Río Chirripó, leg. C. K. Horich, *U.C.B.G.* 57.136 (UC, US). Without locality: From Weinberg, 1903 (US 68429); another sheet (US, unnumbered) of photographs of 2 plants, the latter received from Weinberg in 1908 and 1906 (the photograph of the latter plant is Fig. 296 in Britton and Rose, *The Cactaceae*, vol. 2).

The considerable differences between *W. tonduzii* and *W. imitans* Kimn. & Hutchis. have been tabulated elsewhere;⁵ however, the third species, *W. glaber* (Eichl.) Britt. & Rose, from Guatemala, differs but slightly from *W. tonduzii*. Published data present these differences:

	<i>W. tonduzii</i>	<i>W. glaber</i>
stems	non-glaucous; spines nearly or entirely lacking	slightly glaucous, spines 2 to 4, 1 to 3 mm. long
flowers	8 cm. long or less	10 to 12 cm. long
inner tepals	oblong	oblanceolate

We have not seen live plants of *W. glaber*, but in dried material of both species some of these differences become less distinct. The stems of *W. glaber* are apparently always spiny, but often those of *W. tonduzii* are as well; one or two minute spines are present at each areole of the Lankester plant (see 3 of Fig. 19), and the areoles of a Horich collection (*U.C.B.G.* 57.093), as well as of the Standley and Valerio collection cited above, have 2 to 4 spines up to 3 mm. long. Floral length in both species may sometimes be identical; a flower of *W. glaber* (US 68420), collected in Guatemala by Deam, is only 9 cm. long, as is one from the Standley and Valerio collection of *W. tonduzii*. Although it is not mentioned in the literature, a more dependable floral character for separating these species is the ratio between perianth and receptacle lengths, which is about 1:1 in *W. glaber* and 1:2 in *W. tonduzii*.

Some of the characters tabulated above are thus found to intergrade and perhaps also, in plants yet unseen, overlap. It is possible that *W. glaber* will be reduced to varietal status or to synonymy under *W. tonduzii* after living plants have been studied.

The morphology of *Werckleocereus* has already⁵ been briefly compared to that of the allied genera *Weberocereus* Britt. & Rose and *Ecchremocactus* Britt. & Rose. In this assemblage *W. tonduzii* (inclusive of *W. glaber*) is well distinguished by a number of characters. Its thick, trigonous stems are similar only to the thinner ones of *Weberocereus tunilla* (Web.) Britt. & Rose and *W. panamensis* Britt. & Rose. The receptacle is greener than in the other species, and

its podaria and bracteoles are the least developed. Areoles are present along the whole length of the receptacle, but are absent from at least the apical quarter in the other species. The areole-wool is profuse and blackish, whereas in the others it is sparse, and white to brown. More numerous spines are present in all but the uppermost several areoles—in *Weberocereus tunilla* they are present for nearly three quarters of this distance, but the spines in that genus are hair-like. The fruit of *W. tonduzii* is yellow but in the other species is red. Although there may be up to 15 spines as much as 6 mm. long in each floral areole, during the maturing of the fruit these spines lengthen and new spines are produced until finally each areole contains some 60 spines up to 12 mm. long. The fruits of *W. imitans* become equally spiny when mature, and in *W. tunilla* up to 6 stiff spines appear at each fruit areole, though these are lacking on the flower. All other species have spineless fruits.

Most of these characters seem to signify that within these three genera, which clearly form a phyletic unit, *W. tonduzii* is the most primitive species, and that within *Weberocereus*, a close ally of *Werckleocereus*, the most primitive species is *W. tunilla*. *Ecchremocactus* is the most advanced member of the group and is apparently derived from a line now represented by *W. imitans*.

Despite a close resemblance between the stems of *Werckleocereus* and those of such genera as *Hylocereus* (Berg.) Britt. & Rose and *Medio-cactus* Britt. & Rose, the ancestry of *Werckleocereus* seems to lie with *Nyctocereus* (Berg.) Britt. & Rose, in relation to which *W. tonduzii* and its advanced allies constitute an epiphytic

⁵Cact. Succ. Journ. Amer. 29: 27, 1957.

group that has developed a scandent or pendent habit. This has resulted in conspicuous changes in the morphology of the stem, but not of the flower. *Nyctocereus* differs from *W. tonduzii* mainly in having non-scandent, many-angled stems (although they are repent-pendent and only 5- to 6-angled in *N. chontalensis* Alex.), whitish or brownish areole-wool on the flower, and larger seeds. The flowers of *N. serpentinus* (Lag. & Rod.) Britt. & Rose and *N. oaxacensis* Britt. & Rose are larger and more attenuated than those of *W. tonduzii*, with one continuous zone of staminal insertion, while those of *N. guatemalensis* Britt. & Rose are smaller, with a more or less two-zoned insertion as in *W. tonduzii* and its advanced allies. While some of these similarities between the two latter species may have developed convergently, it remains probable that *Nyctocereus* is not only more primitive than *Werckleocereus*, but is also the genus of *Cactaceae* most closely allied to it. In addition, their similarities are such that their species are probably best considered congeneric. However, the whole group, as well as other genera related to *Nyctocereus*, must be more thoroughly studied before generic lines can be redrawn.

The flowering season of the Lankester collection of *W. tonduzii* has so far occurred between December and March, lasting several weeks. Buds have not been observed to appear from areoles which flowered the previous year, unlike those of *W. imitans*,⁶ *Weberocereus*, and *Eccremocactus*, and are single, again unlike those of the above-mentioned taxa excepting *Weberocereus*. The buds develop in series so that flowers open at intervals over a considerable length of time. The entire receptacle remains green, but, as in many cacti, the perianth-apex on the bud becomes reddened so that the outer tepals, when expanded, have red apices. The outer tepals begin expanding when the bud is only about 4 cm. long, and for a week or so before anthesis all are erect, or more widely expanded, while the inner tepals remain tightly closed. Anthesis begins about 5 p.m., reaches its maximum around midnight, and the flowers close permanently by 9 next morning. Heat seems to be an inhibiting factor in this process, for on our plant those flowers nearest to the glasshouse heating pipes do not expand as fully and close several hours earlier.

Nectarial functions in this species are similar to those of its allies. Even young buds secrete a faintly aromatic nectar-drop from nearly all

bracteoles, the drops being largest near the perianth, and on fully developed buds this nectar has a strong citrus-like aroma; when the flower opens, the interior fragrance is pungently musty, as in allied species, but is comparatively faint. Copious nectar also appears on the podaria of young stem-apices.

We obtained fruit of this species by using pollen of *W. imitans*, and the reverse cross also succeeded. Harry Johnson, of Paramount, California, has created an unusual bi-generic hybrid by crossing *W. glaber* and *Aporocactus flagelliformis* (L.) Lem. (a member of the *Nyctocereus* group and thus related to *Werckleocereus*). While the value of *W. tonduzii* for hybridizing would seem limited, due to its small flowers and unattractive growth, its character of producing many flowers simultaneously from each branch-apex will probably make the species of some value as a parent.

Its requirements under cultivation are similar to those of most epiphytic cacti, but its behavior with us when in contact with excessive heat, and the fact that its habitat is at an altitude of 1500 to 2900 meters, would indicate that the optimum temperature for its cultivation would be cool but probably above freezing. The compost should be largely humus with a high content of organic nitrogen, and, as with other jungle cacti, the use of wood containers, rather than ordinary pots, seems to result in the best growth. The stems are rigid and, like those of such genera as *Hyllocereus*, can be trained only on large trellises. More flowers seem to be produced if watering is reduced during the early winter months.

FROM THE MEXICO CACTUS SOCIETY

In No. 4 of Vol. 2 of *Cactaceas y Suculentas Mexicanas*, there is a feature article "Distribution of the Cactaceae of Baja California", by the late Howard Gates. These notes were sent Dr. Helia Bravo as a collaboration for the second edition of her book "Las Cactaceas de Mexico" which is now being prepared. They are based on the personal observations of the author during the ten explorations made in the peninsula from 1928 to 1957. There is a large map showing the location of the plants discovered by Mr. Gates.

The magazine of the Society is available for \$2 per year. Send direct to Dudley B. Gold, Aniceto Ortega 1055, Mexico 12, DF.

MORPHOLOGY OF CACTI—Buxbaum

A study of the development and shape of each plant organ is necessary to understand evolution and classification of cacti. These original, English editions are valuable to students and botanists. First section deals with the roots and stems. 100 pages, 180 photos and drawings, \$3.50. Part II—The Flower. Contains 80 pages and 300 illustrations, \$3.50. Part III—The Fruit and Seeds, contains 200 illustrations, \$2.75

⁶Since its publication (Cact. Succ. Journ. Amer. 28: 154, 1956) *W. imitans* has been observed to produce up to 5 flowers simultaneously from previously-flowered areoles.

FURTHER NOTES ON ECHEVERIA

By ERIC WALTHER

Research Associate, Department of Botany, California Academy of Sciences

Over twenty years ago we commenced a series of articles on the genus *Echeveria*,* which we had hoped would long before this have culminated in the publication of a monograph of the genus. However, other pressing work, as the building of an Arboretum and Botanic Garden, supervened, and only now, after having finally retired from our position as Director of the Strybing Arboretum and Botanic Garden, Golden State Park, San Francisco, has it become possible to turn back to our *Echeveria* studies. For a start, we here submit descriptions, etc., of several novel species from various sources. A large amount of additional material is being grown under our observation and should yield further novelties in the near future.

*Cactus and Succulent Journal of America, Vol. 7, No. 3, pages 35 etc., September 1935.

Echeveria violescens spec. nov.

Pertinens Ser. GRANDES;* *plantae caulescentes; foliis obovato-orbiculatis, obtusis vel emarginatis, petiolatis, viridi-glaucescentibus, sed purpurascens-tinctis; pedicellis brevibus; corollis latis, carneis exteriore et interiore.*

Synonymy: *E. gibbiflora* var. *metallica* Hort., NOT Lemaire.

Illustration: Smithsonian Scient. Ser., "Old & New Plant-lore," 11, plate 21.

Type: US:399949, cultivated at Botanic Garden, Washington, D. C.

Occurrence: MEXICO. (No definite locality is on record so far.)

Description: (from living plant obtained of E. O. Orpet, Santa Barbara, Calif.)

Stem to 60 cm. tall, in vigorous plants branched in age; leaves 10 to 15, laxly rosulate, obovate-spathulate, at apex rounded to emarginate, mucronate, at base narrowed into petiole to 20 mm. broad, blade with edges folded upwards and often undulate; inflorescence one or many, often branched below into several erect panicles, 50 to 90 cm. tall; peduncle erect or ascending; lower bracts many, obovate-cuneate, 2 to 5 cm. long, flat, at apex truncate, mucronate; ultimate branches often short, lowermost sometimes with only one or two flowers each, strongly nodding in bud; upper bracts oblong-obovate, cuneate, acute; pedicels 2 to 4 mm. long, stout; sepals ascending, very unequal, longest to 10 mm. long, ovate-deltoid to oblong-oblancoate, acute or shortly acuminate; corolla broadly urceolate, pentagonal, 12 to 14 mm. long, 9 to 11 mm. thick at base, 8 to 10 mm. at mouth; petals ovate-lanceolate, acuminate, spreading above, thick

and deeply hollowed within at base, upper rim of cavity prominently transverse; stamens shorter than carpels, the epipetalous ones scarcely dilated at base; carpels short; nectaries transversely

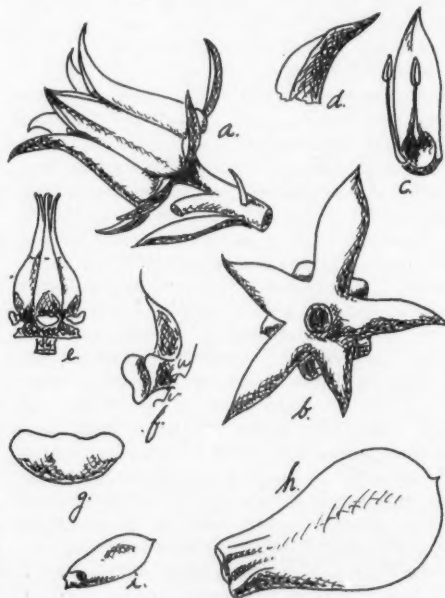


FIG. 21. *Echeveria violescens*

- a. sideview of single flower x 2
- b. bottom view of calyx x 2
- c. inside of single petal x 2
- d. apex of petal x 8
- e. carpels x 2
- f. nectary, sideview x 8
- g. nectary, front-view x 8
- h. leaf x 0.12
- i. bract x 0.4

*Series *Grandes*: *Echeveria* species maximae, *E. gibbiflorae* similes. Ser. *Gibbiflorae* Baker, Berger, pro parte.

rhomboid-reniform, to over 2 mm. wide. Flowers December to February.

Color: Leaves vetiver-green, glaucous, tinged vinaceous-lilac; peduncle oxblood-red; bracts and sepals vinaceous-drab; corolla geranium-pink with bloom, or rose-red to deep pink, inside rose-pink above; styles nopal-red, to maroon at tips; nectaries whitish. All color notes after Ridgway, "Color Standards and Nomenclature."

Remarks: A well-grown plant of *E. violescens* is a truly colorful spectacle when in flower and an ornament to any garden sufficiently frost-free to permit its unblemished development. Our liv-

ing material of this new species is traceable to Dr. Rose's collection at Washington, D. C., and is clearly identical with the illustration cited above. This watercolor was prepared by the late F. A. Walpole, (#524), one of a series Dr. Rose contemplated using for illustrating a Monograph of the Family *Crassulaceae* which he had intended to prepare.

E. violescens appears distinct from *E. gibbiflora* var. *metallica*, as we understand the latter, in its broader, blunt-pointed bracts and rose-colored corolla, the last without any trace of yellow either inside or out. *E. grandifolia* Haworth



FIG. 22. *Echeveria violescens*. (upper left) inflorescence. (upper right) single raceme. (lower left) rosette of leaves. (lower right) large specimen in the late Mr. Orpet's collection.

differs in having longer, narrower, more pointed leaves and bracts, and a red-and-yellow corolla. *E. gigantea* Rose & Purpus agrees in having a red corolla without any trace of yellow, but there the leaves are a deep-dull-green with prominent red margins, and the sepals are much longer and more connate at base.

We are confident that sooner or later this species will be found in Mexico, too, even if rumors of its occurrence in Valle Bravo probably refer to another species.

Several hybrids are said to have been raised with this as one parent, but none seems to be extant at the moment.



FIG. 23. *Echeveria violescens* (Walpole No. 524). From Smithsonian Scient. Ser., "Old and New Plant-lore", 11, plate 21.

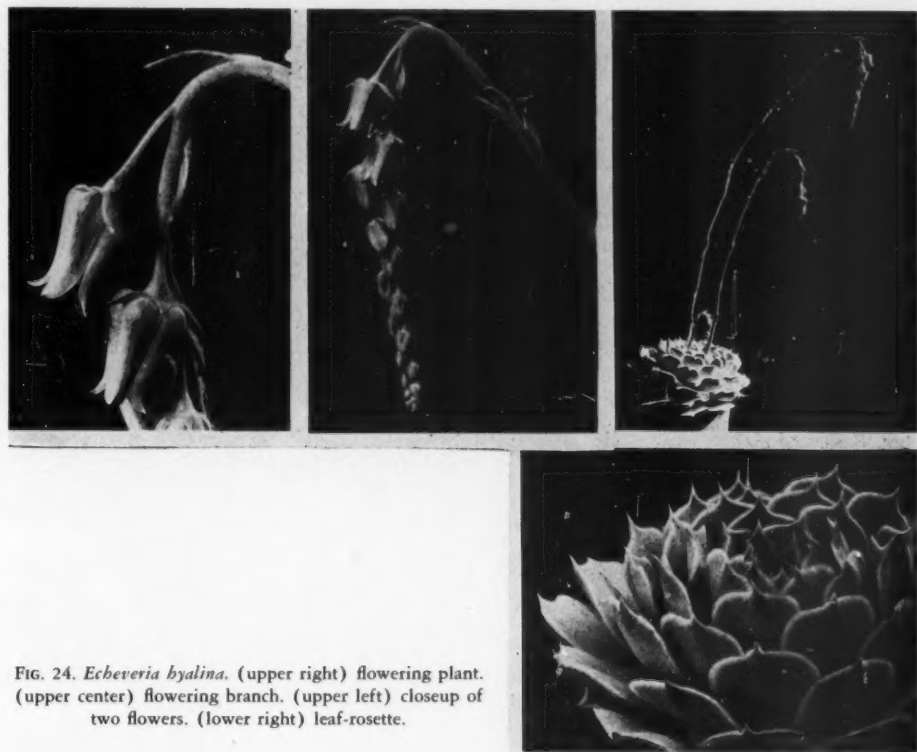


FIG. 24. *Echeveria hyalina*. (upper right) flowering plant. (upper center) flowering branch. (upper left) closeup of two flowers. (lower right) leaf-rosette.

Echeveria hyalina spec. nov.

Pertinens Ser. URBINIAS; *affinis* *E. SIMULANTI*, sed differt foliis obovato-cuneatis, valde cuspidatis; corollis apice viridibus; rosulis parce soboliferis; foliis tenuibus, albidis, margine et apice hyalinis, 6 cm. longis; inflorescentiis simplicibus, racemosis, ad 30 cm. altis; pedicellis turbinatis; sepalis valde inaequalibus, ad $\frac{1}{3}$ longitudinem corollae; corollis urceolatis, apice viridibus, basi roseo-carneis; petalis tenuibus, non carinatis vel excavatis; squamis minutis, tenuibus.

Holotype: CAS:234168, cultivated at Golden Gate Park, San Francisco.

Occurrence: So far as known only in cultivation, first seen in garden of Sr. Christian Halbinger, Mexico City, well-known collector.

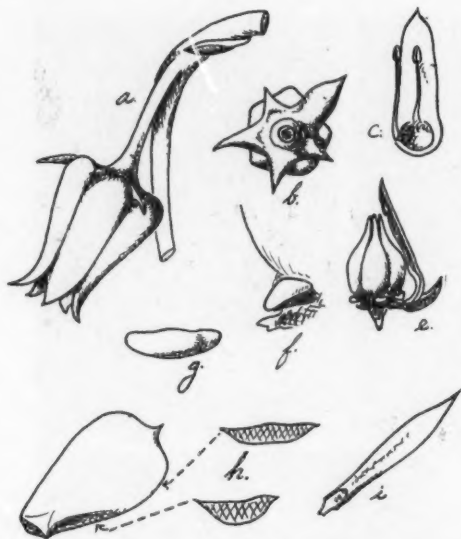
Illustration: Cactus & Succulent Journal, 7:1:A:2, March 1936 (as *E. cuspidata*).

Description: (from living plant received from Sr. Halbinger in 1934.)

Rosettes stemless, belatedly cespitose; leaves

numerous, densely crowded, obovate-cuneate, cuspidate, to 6 cm. long and 35 mm. broad, whitish-crystalline, rather thin, with thin, hyaline margins; inflorescence a simple raceme; scape to 30 cm. tall or more, slender, flexuous, erect; lower bracts linear-oblongate, acuminate, to 14 mm. long, appressed; flowers 14 to 20; pedicels to 10 mm. long, turbinate thickened below calyx, becoming erect after anthesis; sepals very unequal, deltoid, spreading, longest to 5 mm. long, much connate below; corolla urceolate, 11 mm. long, 8 mm. in diameter at base, scarcely pentagonal; petals slightly spreading at tips; nectaries obliquely reniform. Flowers January-February.

Color: Leaves pale-turtle-green, but somewhat glaucous and hence pale-medici-blue, at tips usually tinged dark-vinaceous-grey; peduncle laelium-pink; sepals buffy-olive; corolla old-rose below, above pale-flesh-color, light-paris-green at apex, inside bice-green above, to pale-pinkish below; carpels pale-chalcedony-yellow; styles apple-green; nectaries as the carpels.

FIG. 25. *Echeveria byalina*

- a. sideview of single flower x 2
- b. bottom view of calyx x 2
- c. inside of petal x 2
- d. carpels x 2
- e. nectary, sideview x 8
- f. nectary, front view x 8
- g. single leaf, with
2 cross-sections x 0.4
- h. bract, x 2

Remarks: This novelty was first met with in the Mexico City garden of our friend, Christian Halbinger, who was unable to recall its original source. It does resemble *E. cuspidata* somewhat, but the leaves of the latter are neither crystalline in texture nor hyaline at the edges, and its leaves are also decidedly thinner and distinctly glaucous-pruinose, its corolla is longer, its sepals are longer and broader, and its petals are light-coral-red to the apex. Actually, *E. byalina* is more closely related to *E. simulans*, but differs from the latter species in its broader leaves which are more strongly cuspidate at apex, in its more spreading sepals and the corolla being greenish at the apex.

As here conceived, the Series *Urbinae*, originally founded by Dr. Rose as a genus, with *E. agavoides* as its type, includes a considerable number of rather closely related forms. Until such time as much more extensive field-studies become possible, it is better to record all the various forms as species, if only to compile as complete a record as possible.

Echeveria ballsii spec. nov.

Pertinens Ser. *RACEMOSAS*; * *caules breves; foliis rosulatis, obovato-oblongis, ad 35 mm. longis; inflorescentiis numerosis, racemosis, ad 30 cm. altis; bracteis ad 15 mm. longis, ascenduntibus, oblongis; pedicellis ad 10 mm. longis; sepalis inaequalibus, patentibus; corollis 12 mm. longis, coccineis.*

Holotype: CAS:297644. From plant grown in Strybing Arboretum, Golden Gate Park.

Occurrence: Colombia: Dept. Boyaca, near Siachoque (Type-material), also US:1779205 & UC:682828.

Description: (from living material as cited above) Plant glabrous; stems evident, but short, several from one base; leaves thick, turgid above, oblong-obovate, acutish, to 35 mm. long, about 10 mm. broad, narrowed to less than 5 mm. at base; inflorescences one or two to each rosette, 25 to 30 cm. tall, equilaterally racemose but sometimes unilateral from one-sided lighting; peduncle erect; lower bracts ascending to spreading, narrowly oblong-obovate, to 15 mm. long; flowers about 10, nodding; pedicels to 10 mm. long, their bractlets slender, to 5 mm. long; sepals subequal, longest to 8 mm. long, flat, acuminate, ascending; corolla nearly straight, to 12 mm. long, about 8 mm. in diameter near base; petals spreading at apex, inside with basal hollow; nectaries oblique, trapezoid-reniform, to 2 mm. broad. Fls. VIII—

Color: Leaves cosse-green; bracts chrysolite-green; pedicels onion-skin-pink; sepals chrysolite- to absinthe-green; corolla peach-red to scarlet; petals pale-yellow in shade, pinard-yellow inside; carpels maize-yellow to buff-pink; nectaries whitish.

Remarks: Most Colombian material seen belonged to the ubiquitous *E. quitensis*, from which our new species differs in being almost stemless and in its small leaves. The Mexican *E. bella* Alexander probably comes closest to *E. ballsii*, but is separated by a distance of about 1800 miles; it differs further in its leaves being not over 18 mm. long, and only 2 to 4 mm. broad. We regret that we have been unable to study any material of *E. bella*, the type being unavailable.

We take pleasure in dedicating this novel species to Mr. E. K. Balls, now of the staff of the Santa Ana Botanic Garden at Claremont, California.

*Series *Racemosae* (Baker, Berger, pro parte); plantae glabrae, caudicibus brevibus vel nullis; radicibus haud fusiformibus; inflorescentiis aequilateralibus, racemosis vel spicatis; pedicellis bibracteolatis.

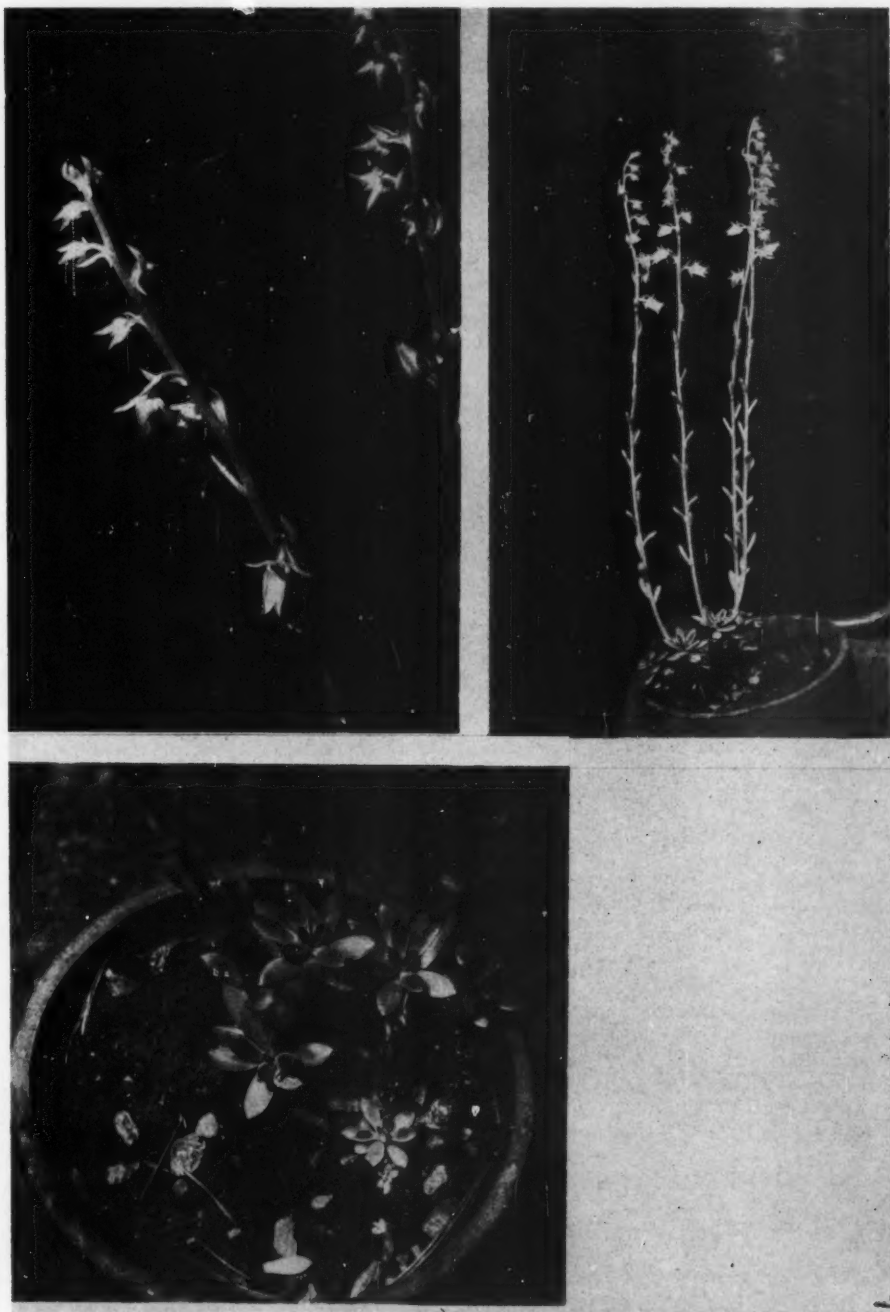
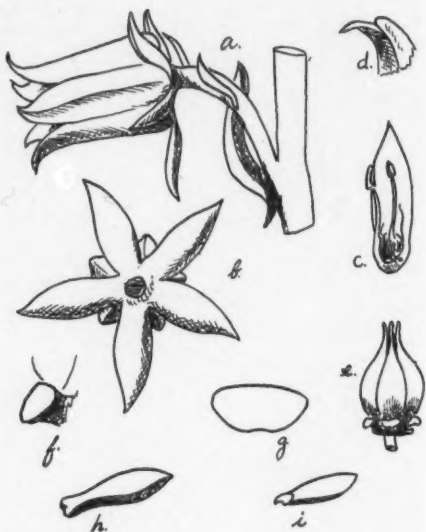


FIG. 26. *Echeveria ballii*. (upper right) flowering plant. (upper left) flowering branches.
(lower left) rosettes of leaves.

Dr. Charles H. Uhl of Cornell University writes us that the haploid chromosome number of this new species is 40, rather a rare number in the genus and duplicated only in the entirely unrelated *E. purpusorum*.

FIG. 27. *Echeveria ballsii*

- a. sideview of single flower x 2
- b. bottom view of calyx x 2
- c. inside of petal x 2
- d. apex of petal x 8
- e. carpels x 8
- f. nectary, sideview x 8
- g. nectary, front view
- h. leaf x 0.4
- i. bract x 0.4



Echeveria johnsonii spec. nov.

Pertinens Ser. NUDAS; * *caulibus distinctis*; *foliis alternis, nec rosulatis, clavato-teretibus, ad 35 mm. longis, obtusis; inflorescentiis subspicatis, circa 12-floribus; bracteis foliis similibus, brevibus, ad 20 mm. longis; pedicellis 2 vel 3 mm. longis; sepalis subaequalibus, ad 7 mm. longis, patentibus; corollis 11 mm. longis, 9 mm. diametro, rubris.*

Holotype: CAS:354989; from plant cultivated in Strybing Arboretum, Golden Gate Park; originally collected at type-locality by Mr. H. Johnson.

Occurrence: Ecuador: Ibara (about 100 miles north of Quito.) *Type*.

Description: (from living plant cited above) Plants glabrous, with evident, usually branching stem to 10 cm. tall or more, erect to somewhat decumbent; leaves scarcely or not rosulate, but crowded along upper end of branches, clavate to linear-oblong, subterete, obtuse, minutely apiculate, usually about 35 mm. long, 9 mm. in thickness; inflorescences subspicate, arising from below the leaves, about 10 cm. long, erect or ascending; bracts terete or slightly flattened, linear-oblong, 2 cm. long, obtuse or acute; flowers 10 to 12; pedicels 3 mm. long or less; upper bracts 10 mm. long; bractlets 2, somewhat

smaller; sepals subequal, ascending to spreading, long, 9 mm. in diameter at the open mouth; petals sharply keeled, erect or somewhat spreading, inside at base with rather small hollows, tips apiculate; carpels rather slender, 8 mm. long; nectaries lunate-reniform, oblique, about 1 mm. broad.

Color: Leaves biscay-green, with faint lines of corinthian-purple at edges near apex; bracts similar to leaves, upper bracts apple-green, corinthian-purple at apex; sepals similar to bracts; corolla ochraceous-buff, at apex and on keel coral-red, inside light-orange-yellow; carpels vetiver-green; styles pompeyan-red; nectaries as the carpels.

Remarks: In naming this novel species after Mr. Harry Johnson we wish to record not merely the fact that this was discovered and introduced into cultivation by him, but also the many services which he has rendered the intelligent cultivation of cacti and succulents during many years.

E. quitensis in its broadest sense is very near *E. johnsonii* but differs in its usually decidedly flat, thinner leaves generally rather more rosulate; *E. sprucei* too comes near but is distinct by reason of its deflexed pedicels and reflexed sepals, with leaves usually rather more gray or glaucous.

The Mexican *E. macdougalii*, as yet unpublished, has subangular leaves and bracts somewhat more greyish in color; its bractlets are much longest 9 mm. long, linear-oblong, subterete, acute; corolla strongly pentagonal, to 11 mm.

*Series *Nudae*: species *E. nudae* similis; glabrae, suffruticosae; inflorescentiis aequilateralibus, racemosis vel spicatis; pedicellis bibracteolatis.

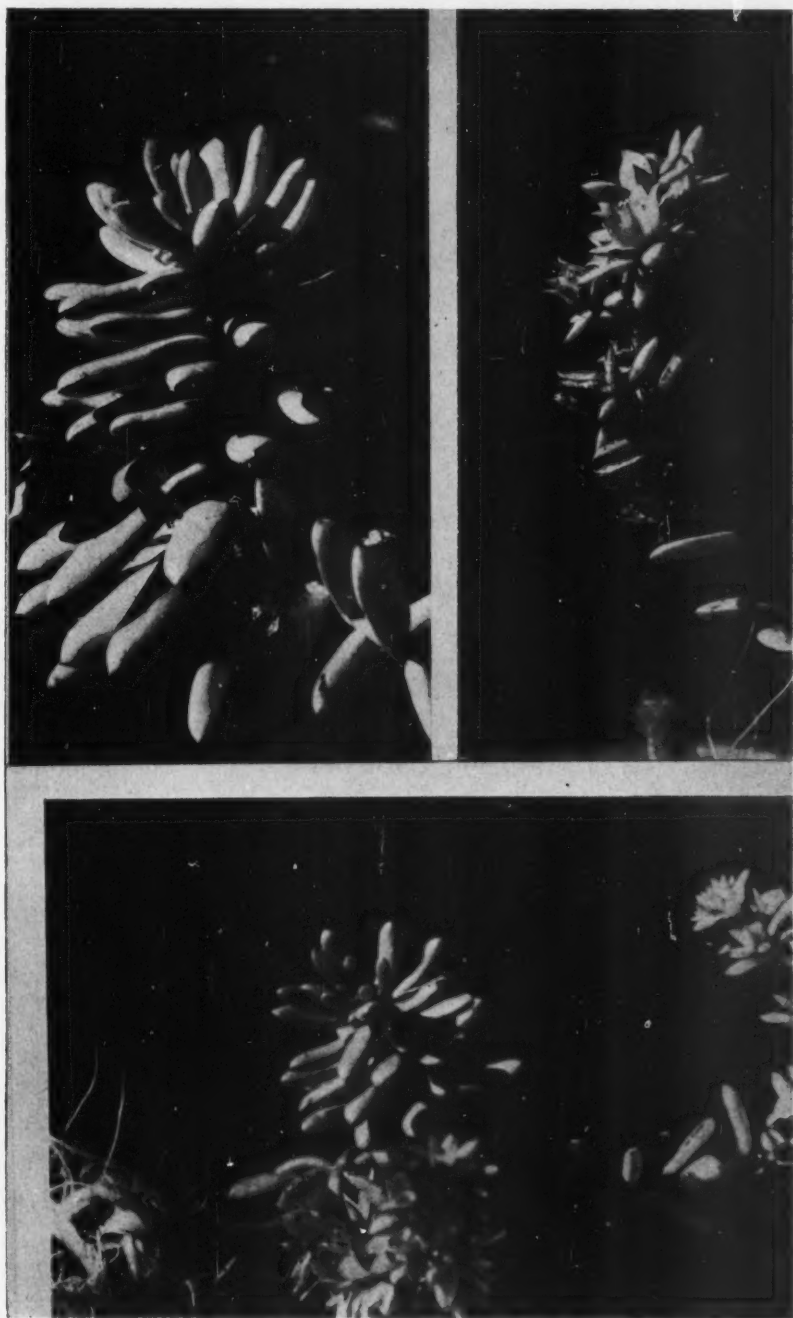


FIG. 28. *Echeveria johnsonii*. (upper left) leafy branch. (upper right) flowering shoot. (lower) leaves and flowers.

smaller, the corolla reaches a length of 18 mm., and is almost straight, scarcely urceolate.

According to Dr. C. H. Uhl of Cornell University, the haploid chromosome number of *E.*

johnsonii is 22, the same number also found in *E. quitensis*, *sprucei* and the Mexican *E. montana*, all of which have much in common and no doubt are closely related.

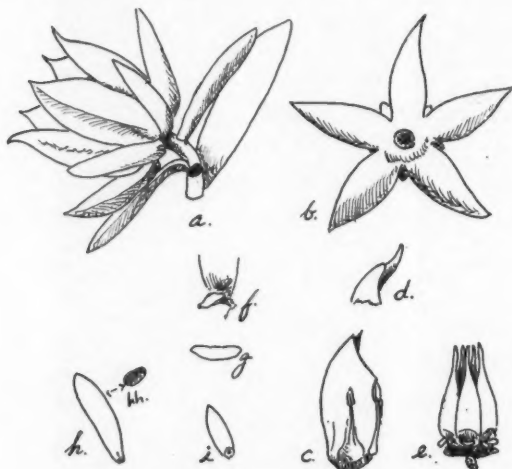


FIG. 29. *E. johnsonii*

- a. sideview of single flower x 2
- b. bottom view of calyx x 2
- c. inside of petal x 2
- d. apex of petal x 8
- e. carpels x 2
- f. nectary, sideview x 8
- g. nectary, front view x 8
- h. single leaf x 0.4
- hh. single leaf, cross-section x 0.4
- i. bract x 0.4

HORTICULTURAL SOCIETY AWARD

Dr. Harry M. Butterfield, The Tribune's garden editor and retired agriculturist for the University of California extension service, has been selected as the winner of the second annual award of the California Horticultural Society.

The award was instituted last year by the Society to honor persons making outstanding contributions to horticulture in California through teaching, writing or actual practice.

Dr. Butterfield's selection was based on his activities as a member of the U.C. Agricultural Extension Service for 41 years and on his writings. He is an authority on the history of plant introductions in California.

NEW MEXICO CACTUS AND SUCCULENT SOCIETY

Last six months of 1957

During the month of July no meeting was held as the delegates to the National Convention and possibly some other members were to be absent.

The next meeting was held on 16 August at the home of Mrs. Ann K. Sherman. During the business meeting Mrs. Sherman reported that Mr. Chris Steinmann was appointed as fourth delegate to the Convention to take the place of Mrs. Dennis Cowper, who was unable to attend. Mrs. Sherman and Mr. Ed Nadolny reported on the National Convention. An enjoyable time was had by everyone. Many cactus gardens and private collections were visited. Mrs. Sherman and Mr. Nadolny also took numerous color slides of the places visited. Additional visitors to the Convention were Mrs. Chris Steinmann, Mrs. Herford and Mr. Hohn. Mrs. Herford and Mr. Hohn are former members of the Society. All delegates and visitors commented on the fine California hospitality.

It was decided at this time that additional cacti would be planted at the Municipal Auditorium on 24 August. Other business discussed was the exhibiting of cacti at the New Mexico State Fair to be held during

the latter part of September and early October. No further business being on hand, the meeting was adjourned.

The September meeting was held at the home of Mr. and Mrs. Maynard Blumer on the 20th. At this time Mr. Prince Pierce was named the official representative of the New Mexico Cactus and Succulent Society in handling matters relating to the field of taxonomy. Further business brought up was the finalizing of plans to exhibit cacti at the New Mexico State Fair. It was decided to set up the exhibit on 27 September.

The October meeting was held on the 18th at the home of Mrs. Dorothy Miller. At this meeting a nominating committee was appointed to select officers for the coming year 1958. Other business discussed was the loss and damage to exhibited plants at the State Fair. It was decided that further exhibits would not be held unless exhibitors could be assured of adequate protection for their plants. A letter of protest was sent to the Fair Board and it is anticipated that future exhibits, if any, would be held in more adequate quarters. It was decided to purchase a blackboard, stand and easel for presenting programs and lectures.

The November meeting was held at the home of Mr. and Mrs. Leon Blake on 15th November. At this meeting Mr. Maynard Blumer was elected president, Mrs. Ann K. Sherman vice president, Mrs. Sue Blumer secretary, Mr. Van Luhrs treasurer and Mr. Prince Pierce affiliate director. It was also decided to have a Christmas Party in December. A committee was appointed to make the necessary arrangements.

On 13 December a Christmas Party was held at La Hacienda Restaurant in Old Town, Albuquerque. The party was attended by 24 members who enjoyed a fine dinner. The tables were tastefully decorated with cactus favors. All present reported a very enjoyable evening.

Charles L. Furrer, Sr.
8026 San Juan Road, NE
Albuquerque, New Mexico

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

CHAPTER 6

The Mammillarias exceed 100, and limited space will not permit a detailed description of each. Hence some will be omitted and others only briefly mentioned. As the majority come from Mexican regions, they usually prefer full sunshine, their spines providing any protection needed. Although in their native habitat they are sometimes partially shaded by dried grasses they need no shading in a well ventilated glasshouse, for our temperatures, even under glass, would not reach the scorching heat encountered day after day in the desert. Keep them growing—repotting every second year, for a plant in full growth will never sunburn. A good porous soil is essential, with extra lime added for the white spined species. Give plenty of water from spring onwards—every other day during hot spells with an overhead mist spray in the evenings. These plants are generally clustering, with tubercles in spiral rows instead of ribs. Haworth named them from the Latin *mammilla*, a nipple. The spines only are born in the areoles on the ends of the tubercles, the flowers appearing in the axils of the tubercles in a circle near the top of the plant. Mealie bugs are their chief enemy, so watch for them and seek out their hiding places.

As there are so many to describe the better way will be to start in spring and take them in their order of flowering month by month. The meaning of the name will be in quotes.

AUGUST. Are there any blossoms to greet the Spring? It is a little early to expect flowers yet. You have found one? Why, it is *M. multiplex* with little cream blooms almost hidden amongst the red berries; this is a "many headed" cluster. Here are other cream ones in *M. proliфера*. It too clusters, "it reproduces freely by off-sets." Last year's red seed pods interspersed amongst the cream flowers make these plants most attractive. Over here are more—yellow ones this time on *M. schmollii*, named after F. Schmolli. A pretty one isn't it? There are much larger cream flowers with reddish mid ribs on *M. recurva*, "bent or curved back," referring to the spines. These plants will be well garlanded in a week or two. I wonder would it be possible to view a collection of Mammillarias and not find a flower? We shall see as we go along.

SEPTEMBER. What a transformation this month! Aren't they a picture? Especially those fluffy ones. This one looking like a pot of thistle-down is *M. erectohamata*, "erecto, upright, ham-

atus, hooked," with cream blossoms peeping out so prettily around her fluffy head. All the babies clustered at her feet are similarly adorned. There are several belonging to this group. *M. bocasiana* is one, even more beautiful, though not such a large plant, with pink flowers and deeper pink mid-ribs. *M. kunzeana*, (dedicated to Dr. R. E. Kunze) is another, not quite as fluffy, with flowers almost yellow with a dark bronze mid rib. *M. schelhasei* with pale cream blossoms and *M. schmollii*, mentioned earlier, are not nearly as downy, but delightful plants all the same. The hybrid, probably of *M. erectohamata*, is the fluffiest of them all, real silken thistle-down. The cream flowers are smaller but the silkiness of the plant compensates for this. All in this fluffy group have brown hooked central spines, but the next one is a little different. It has "golden" hooked spines, but the same cream flowers. It is *M. aurihamata*, with radials very fine and hair-like instead of being fluffy.

M. elongata and its many varieties are all attractive with their flower encircled stubby fingers. They too, have cream blossoms, but with a much shorter, more compact, paler bloom, with rounded petals and only the faintest mid rib. This one with the lacy appearance, I believe to be Var. *Schmollii*, and to me is the prettiest of them all. *M. discolor* "of a different colour," has small, dainty almost white flowers with rose pink stripes, and *M. uncinata* with its hooked spines has large yellow ones with bronze mid ribs, making a very showy plant when in full bloom. The blossoms are a little larger than some too. That one with the yellow flowers peeping out from amongst all those pale yellow spines is *M. densispina*, no wonder it is so called! Over at the back, the large dark green one with the quantity of wool and heavy black spines is *M. gigantea*, the canary yellow flowers contrasting well against the dark green body. The large cluster next to it with the teal body, long reflexed cream spines and rose pink flowers, is *M. compressa* Var. *longiseta*, "with long bristles." It is beautiful with the sun shining on that glorious pink. I like "long spined" *M. macrantha* too. The large *magneta* flowers look very elegant, for each sits on top of a fluffy piece of cotton wool. They don't seem to be seated as far down into the plant as are most other Mammillaria flowers. And do you notice the stigma lobes are salmon pink? *M. bravoae*, named after Mrs. Helia Bravo, is a good plant too. Quite a contrast from

the last as it has the tiniest light magneta flowers and sparce matted wool wraps the body in a light blanket. Named after F. J. Haage Jr. *M. haageana* is a tallish plant, with long, narrow, deep magneta flowers. See how fine are the petals? This is a most attractive plant.

Many people think *Mammillaria* flowers are all alike, with either cream or magneta flowers,

but we have seen already that although there is a similarity, there is also a wide variety of form, size, and colour, and when this fact is added to the endless variety in the shape of the plants and in the spines, I think you will agree that this group holds more interest than any other in the glasshouse.

OCTOBER. This is certainly the best month

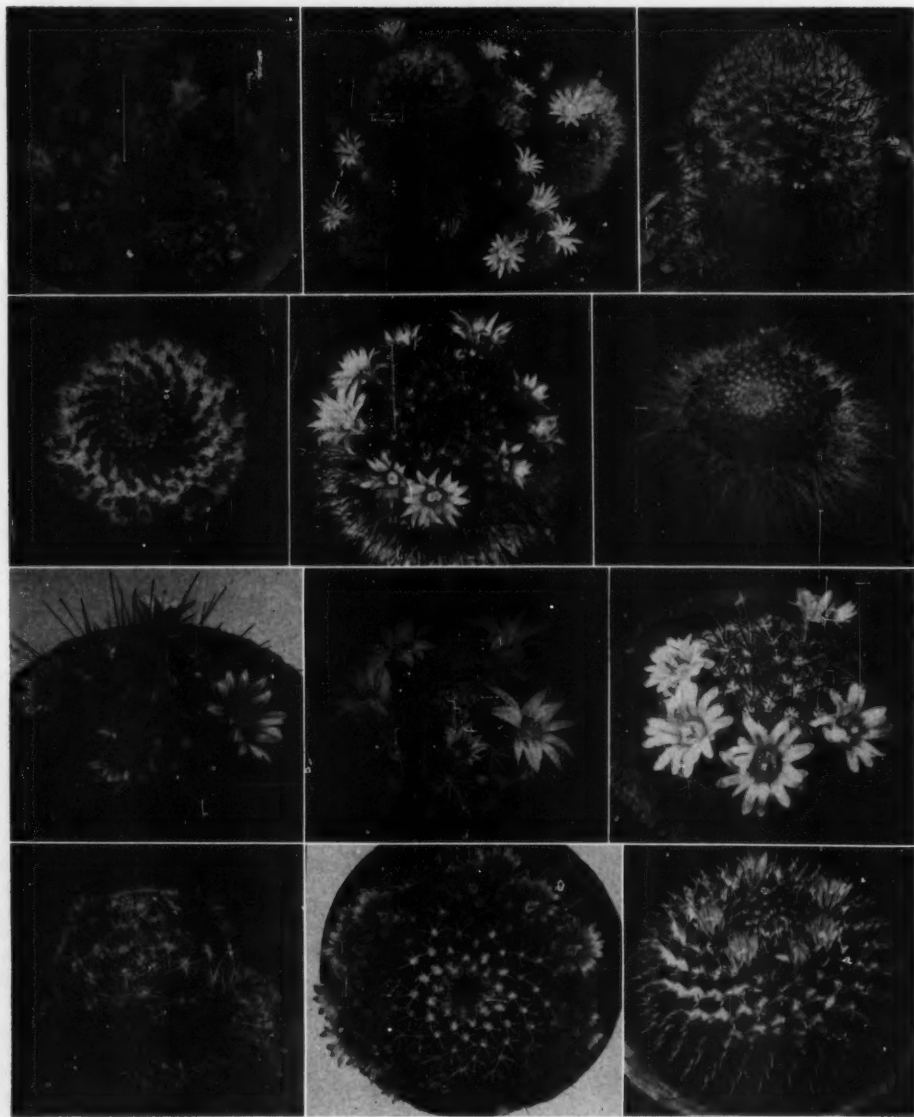


FIG. 30. Left to right. (Top row) *M. haageana*, *M. erectahamata*, *M. prolifera*. (Second row) *M. bravoae*, *M. spinosissima*, *M. hahniana*. (Third row) *M. winteriae*, *M. melanocentra*, *M. crassispora*?. (Bottom row) *M. erythosperma*, *M. neophaeacantha*, *M. sempervivi*.

for *Mammillarias*. Isn't it a wonderful show! Now you know why I think they should all be grouped together. Scattered around the glass-house they would not have made this glorious sight. All those we saw last month are still in full bloom and now many others have joined them. Which do you think the most outstanding amongst the pink to magenta varieties? It is hard to say isn't it, but I think *M. spinosissima* is most colourful. Crowned with medium sized, narrow petalled, wide open blossoms, the spines above and those intermingling with them are a striking cinnamon red; the two colours clashing, yet blending as can be done only by Nature. "Superlatively spiny" is the meaning of its name. How true a description! The next most pleasing would be *M. hahniana*? Looking so charming with deep rose pink blossoms tucked into her long white hair, she looks a dear "old lady"—so feminine. We could not possibly call her an "old man." Then there is *M. winteriae* with soft resid green body colouring and light salmon pink flowers surrounded by thick wool, and yet standing well clear of the plant to show off their beauty, for these blooms are large and exquisitely formed and look most decorative among the long, needle fine spines, making this an exceptionally choice plant. *M. melanocentra* is also most handsome with palish, rose pink, spiky petalled blooms, nearly as large as *M. winteriae*. Another with pretty pale pink blossoms is *M. crassispina* (this name is doubtful), which have a deeper pink mid rib and rounded petals, and flowers not quite as large as the other two. These three make an excellent trio, each with their large blooms with differently shaped petals, and each such a clear pure pink.

When there are so many outstanding plants who can say which is the most beautiful? What about *M. neophaeacantha* with its "dusky spines." It has a complete ring of pink blossoms which hold their petals wide to the sun and shine like satin. What could be lovelier? Then there is *M. compressa*. What a colourful plant it is with red spines, for this is Var. *Rubrispina*. The dark red tipped centrals are long and curved while the pinkish red radials also long, are finer; the medium sized flowers, rose pink. One in a different shade of pink is *M. erythrosperma*, "with red seeds." This has vieux rose blossoms looking very sweet amongst the fine, white hair-like spines of this prolific little plant. *M. solisii*, collected by Octavio Solis is a most attractive plant; its dark green body contrasting so well with the deep red flowers. Of these three little golf balls all in a row, *M. dealbata* is the choicest. Its name means "whitened" and the spines are so white, except for the erect, short black centrals, they could have been freshly whitewashed. *M. morganianum*, appears cream beside it, al-

though everything about it is white except the tiny cream felted areoles. Hiding under a covering of fine wool, *M. lanata* is living up to its name "woolly." The spines are very short, the tiny centrals faintly coloured light brown. These three all have small, bright magenta flowers. This large plant, also with short white spines and matted white wool is *M. klissingiana*. It looks quite gay with a circle of small magneta flowers and a lower circle of red seed pods.

M. sempervivi is a grand plant. Its name means "always living." Here's hoping my plant proves true to its name! The squarish tubercles, tending to point upwards give this plant a flat top, which is filled with thick white wool, and the deep magneta blossoms encircling it give it the appearance of being crowned. Another choice one is *M. zeilmanniana*, which, with its garland of bright violet blooms never fails to please.

It is quite the usual thing for visitors to exclaim when they see *M. bombycina*, "Oh, that is a lovely plant!" And they are quite right. It is! Its name means "silken" which accurately describes the silky white radial spines covering its tall body, which is well protected from inquisitive fingers by long, needle fine, brown hooked centrals. These stand out around the plant like a halo. There is only one way to handle this plant without damaging those beautiful centrals when repotting, and that is to hold it by the base. The flowers too are exquisite in a soft pinkish mauve shade. *M. ehretiana* has blooms almost into a deep rose shade, and long curved biscuit coloured spines tipped with black. The next plant, with the larger than usual pink blossoms, is definitely wrongly named. The label reads *M. stenocephala* meaning "narrow headed," which this one certainly isn't! It is an attractive plant with large rounded tubercles and thick white wool, not only in the crown, but almost to ground level. I wonder which one it is? *M. vaupellii* named after Friedrich Vaupel, also belong to this magenta group; an imposing plant with white radials and handsome ginger centrals; very colourful indeed. Here is an elongated one called *M. sphacelata* covered with short, thick, stiff white spines displayed against the dark green body; while the deep magenta blooms are long and thin like the plant. Although this is one of the more spectacular, its name means — "gan-grined"!!!

There is no doubt whatever about which is the most outstanding amongst the cream coloured ones. The honours go to *M. candida*. Why its very name means "white, shining and brilliant!" The plant itself is a big white ball. The large cream flowers first open with a pale rose mid rib. As they mature the pink from the mid rib flushed the whole flower. If you look into

its heart, you will see the filaments are bright pink too with golden anthers, with the base of the petals likewise tinted. This plant with its soft colourings is one of the best. Another gem is *M. microheliopsis* a much smaller and most elegant plant. A cluster of fine cream radial spines surround the deep rich brown centrals. The tips of the little cream blossoms are brushed with pale rose which converges into the deeper pink of the mid rib giving these flowers a very dainty appearance. The name means "a small sun" referring to the radial spine clusters. *M. pygmaea*, has satiny cream flowers, and deserves a much nicer sounding name. The one it has means "very small," which is quite correct, as this is not a large plant by any means, and when covered with these shining blossoms is quite outstanding. *M. zuccariniana*'s flowers are also cream, on a plant with much white wool and long chocolate brown spines.

Sometimes mistaken for an *Elongata*, *M. echinaria*, spiny "like a hedgehog," has a central spine and therein lies the difference; also the flowers are not as squat, but have sharply pointed petals and a deep mid rib which tints the petals pink. Here is a lovely little ball of fluff, only the size of a walnut, called *M. schwartzii*, named after G. Schwartz, completely encircled with cream flowers. One with large biscuit coloured blossoms is *M. tetracantha*, "with spines in fours." Wide flowers these with deep copper mid ribs and pale pink filaments and style. It is a grand plant and though it fills a 6-inch pot, could do with a much larger one. What a pretty little plant *M. trichacantha* is, its yellow flowers showing to advantage against its dark green body. It has many very small thin tubercles, fine white "hair-like spines," and fine black hooked centrals. *M. surculosa* is altogether different from any other. The bright yellow flowers have only eight or nine long narrow petals, opening out widely to show the stamens and very long style capped with large stigma lobes; so different indeed, it scarcely seems to belong to this family at all. The brightly coloured and differently shaped blossoms make it very conspicuous; it is always favourably commented upon by visitors. Speaking of visitors reminds me of one who was quite lost to this group. She was a new comer to the wonders and beauties of Cacti, and out came her note book and pencil. She was scribbling hard when I chanced to remark that some of the less spectacular often had the more beautiful flowers. She paused for a moment, then said thoughtfully, "Well! Isn't that just like people! You can't tell which are the best just by looking at them. You have to know them." How right she was!

NOVEMBER does not add many more to the display but it brings into blossom some of

the larger plants. The tallest *M. kawinskiana* is 10 inches high and 4 across. It makes a striking picture with its deep magenta blooms and white woolly top. *M. calacantha* "beautiful spined," stands out amongst the others, being a little different. The grass green body has short brown spines which appear to lie flat against it, some pointing up, others down. It looks like a ball and seemingly quite easy to handle, until one tries! The magenta flowers are ridiculously small for the size of the plant. *M. petterssonii* has short white wool, fawn spines and magenta blooms. *M. compressa* Var. *tricantha* has long white spines tipped with brown "in threes"; again the flowers are magenta. Violet blooms adorn *M. drogeana* with its shorter white spines. Little rosettes of short, very fine, white spines cover the body of *M. brauneana*, and the tiny pink flowers have a deeper mid rib. Another with short white spines and longer radials is *M. celsiana*, a mature plant with small flowers. *M. aliscana* gives promise of being a fine plant; though still quite small it has a pink blossom with a deeper mid rib. *M. heyderii* is a beauty. See the little star of fine spines on the ends of the dark green tubercles? It is still small but has a spiky pink flower. I can well imagine how it will look in a year or two with those large flowers! "With a snowy head" and rose pink blossoms, *M. chionocephala* is a very pleasing plant with fine white hair-like radials covering its resida green body. Here is *M. nunezii*, collected by Prof. C. Nunez, with a much darker green body, white radials a little longer and coarser and with red central spines. This colourful plant has flowers which, when closed are ruby red, but when open are several shades lighter. Another little gem is *M. microthela* Var. *superfina*, true to its name "super fine." How green it is, with short wide tubercles each adorned with a pair of miniature white spines at right angles. The flat crown is full of thick white wool, through which small pink and white blossoms elbow their way. Like little daisies on a frosty lawn aren't they?

There are not as many in the cream group, for as the season advances the cream flowers give way to the magentas. It is difficult to describe the plant of *M. bucareliensis* as it is completely covered with flowers, but a few long tortise shell coloured spines do protrude through the cream petals. Its natural habitat is Bucarel, hence its name. Here is *M. baumii*, one of the choice ones, endeavouring to hide under a cobweb of fine hairlike cream spines. The bright yellow lemon scented blossoms are very large, especially on so small a plant. How brown the new centrals are in the crown of *M. centricirra* Var. *gladiata*. It is strange they turn cream so soon. This is a very nice plant with its cream spines and cream flowers pushing through the white wool. *M.*

elegans meaning "elegant or tasteful" describes itself. The short white spines are tipped with brown. *M. parkinsonii*, named after John Parkinson, at one time British Consul-General in Mexico, is another good plant with brown tipped cream spines. Notice how it is beginning to develop two crowns? That is characteristic of this

plant. The flowers are almost pink as the pink from the mid rib stains the petals; the whole plant, flowers, spines and all reflects the pink glow. Doesn't *M. longicoma* look sweet with its little pink and white blossoms? This plant belongs to the "Fluffy" group, its name meaning "long haired." The central hooked spine is gold-

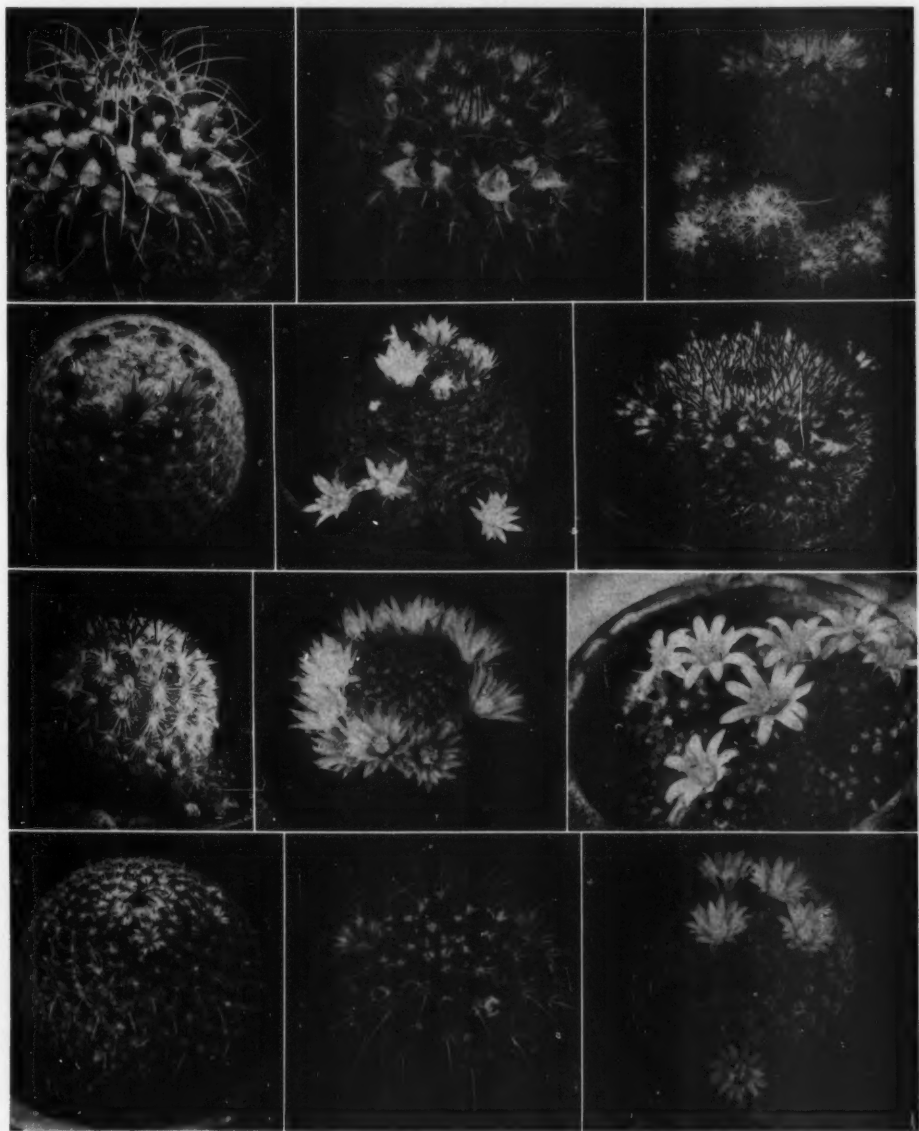


FIG. 31. Left to right. (Top row) *M. ehretiana*, *M. stenocephala*, *M. echinaria*. (Second row) *M. candida*, *M. pygmaea*, *M. vaupelii*. (Third row) *M. microheliopsis*, *M. trichacantha*, *M. surculosa*. (Bottom row) *M. calacantha*, *M. centricirra* var. *gladiata*, *M. longicoma*.

en brown. The pink mid rib could have been defined with a light brush stroke. Here is a fluffier one, "white haired" *M. albicoma*,—another ball of thistle-down. Can you see the golden central hooked spine, so fine it is visible only in certain lights? Isn't it beautiful! And what long spiky petals! They make the flower look very long and slender. Why! it has quite a long tube! These blossoms are almost as white as the plant, except for the golden glow in the throat, the golden stamens and the elusive golden central spine. Each *Mammillaria* has its own special appeal, that is why it is so difficult to say which is the best, and I am asked that question so often. But there is no doubt about the beauty of *M. johnstonii* var. *sancarlensis*. What a colourful plant it is! Both the radials and the long tortuous semi-flexible central spines are pale pink, gradually deepening to maroon at the tips. The large biscuit coloured flowers have a deep pink mid rib shading to pale pink in the throat and seemingly flushing the whole blossom. Mr. Ivan M. Johnston must be very proud of the beautiful plant he found.

DECEMBER adds four more to the display. *M. mystax* a large green plant, and as yet, not producing the long centrals which give it its name "moustache." I understand it may not do so until six years old, mine is now four—so I am hoping! The smallish flower is bright magenta. *M. orcuttii*, named after—Orcutt, is a good plant with nothing outstanding about it; the flower is small and again bright magenta. Dr. B. P. Reko is responsible for the name of *M. rekoii*, a tall, attractive bright green plant with fine, short radial spines and a brown hooked central. Its large deep pink blossoms are very striking. This month's gem is undoubtedly *M. blossfeldiana*. The plant is small with hooked spines, but the flower!! It is wonderful! Very large, white, with a lolly pink mid rib so broad merely an edging of the white remains. The casual observer would say the flower was pink with a white edging. The colouring is unique for a *Mammillaria* and so is the size of the flower.

JANUARY ushers in a few more, all with deep magenta blooms. The choicest being *M. pringlei*, collected by Pringle, with long fine cream spines and even finer radials. Magenta blossoms adorn its lovely head. *M. pfeifferi*, named after Dr. Ludwig Pfeiffer, is somewhat similar with slightly coarser spines, fawn instead of cream. Then there is *M. rodantha*, with long golden brown spines, and as its name says "with rose pink flowers." Its variety *Sulphurea*, has much shorter sulphur yellow spines. *M. polythele* with "many tubercles" and *M. durispina* "hard spines." I could go on, but space will not permit. Each has something different about it to suggest its name, and all have magenta blossoms.

Here is one quite different. An attractive and colourful plant *M. mazathanensis* found near Mazatlan, Mexico. This is elongated with golden brown centrals, and, flat against the body are fine, long white radials. There are a few hooked spines too, so maybe this plant is Var. *Mono-centra*. It is very showy, as the new spines in the crown are red. And what a size the flowers are! Very large for such a small plant. Do you notice anything different about them? See the styles? Almost as long as the petals, and stigma lobes are pale green! Most unusual for a *Mammillaria*, they are generally cream. We have seen pink ones, but this is the first green. It looks quite arresting against the gorgeous pink petals.

FEBRUARY. We are now into Autumn and a change has come over the group, both in the colour of the flowers and the type of plant. The flowers are now white, replacing the magentas which have predominated the last two months, and the plants have long tubercles and soft spines that feel like dried grass! The largest is "ensnaring or deceiving" *M. decipiens*, so be careful! There are fine sharp, golden centrals amongst the soft white ones. The long narrow petalled bloom is sweetly scented. *M. albescent* "becoming white," is lighter green and the tubercles are not quite as long. There are no central spines and the fine, white radials lie flat against the plant; the flowers are rather smaller. *M. campotricha* "with flexible hair" has long sharply pointed tubercles and soft spines that twist and curl in all directions, often called "The bird's nest cactus." When I pass it I can't refrain from patting it, just to hear the scrunchy noise the spines make. These last three all have white flowers. The only other one for this month is *M. schiedeana*. There is no other plant quite like it, for the body is composed of hundreds of tiny tubercles, each crowned with a star of minute, fine, golden hairs, very like glochids on an *Opuntia*, only these are not barbed. It would be impossible to be hurt by this plant. It has its circle of small pale cream flowers, but they add nothing to the beauty of the plant, they spoil the symmetry. Without them it is a beautiful golden ball.

MARCH. What will this month bring us? *M. geminispina* in bloom at last! Isn't it a handsome plant, so tall and stately in spite of its shaggy appearance; its light green body densely covered with snow white spines "in pairs" pointing in all directions. The radials are almost hair-like, soft and silky, but the four centrals are fine and flexible tipped with dark brown. The top of the plant is thickly covered with white wool and now amongst all this snowy whiteness are bright pink flowers. It is exquisite! This one, resembling a brain is the cristate form of the same plant. Hard to credit isn't it? But there it

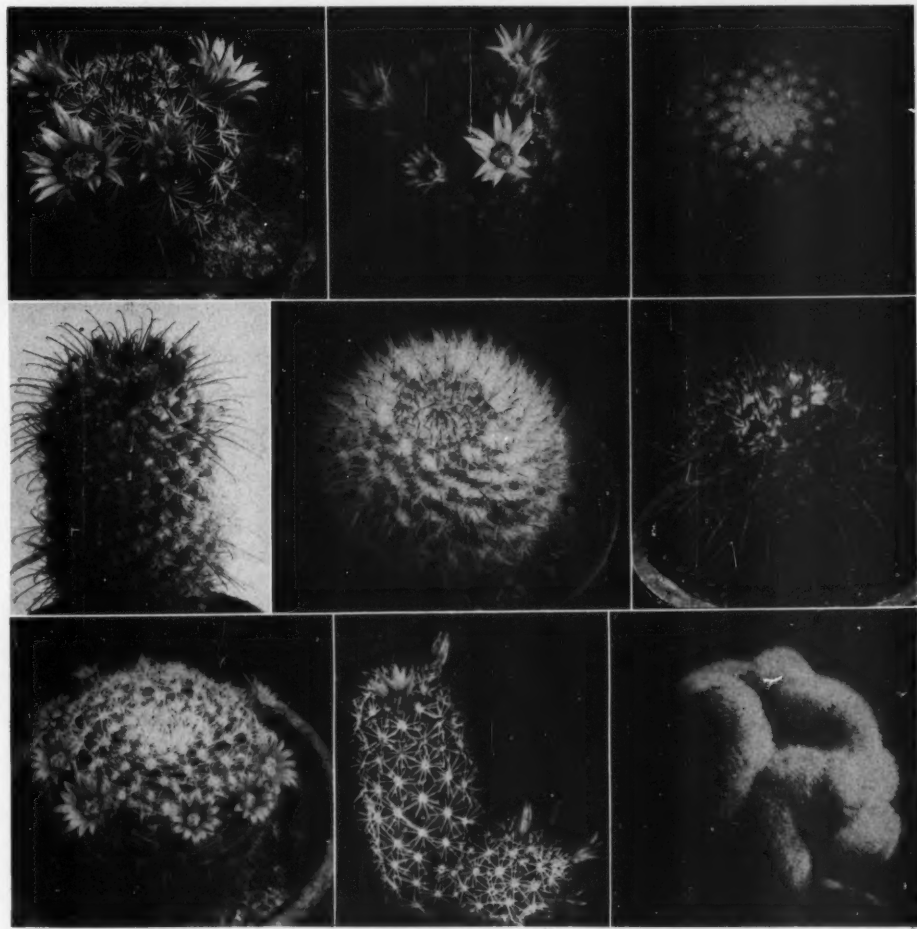


FIG. 32. Left to right. (Top row) *M. johnstonii*, *M. albicoma*, *M. pringlei*. (Second row) *M. bombycina*, *M. S. & G. Mexico?*, *M. rhodantha*. (Bottom row) *M. hahniana*, *M. sphacelata*, *M. geminispina* crest.

is *M. geminispina cristata*!

APRIL & MAY add nothing new, but there are still plenty of the others in bloom to keep up the continuous display.

JUNE. Surely nothing new in this mid winter month. But yes! A cream flower on *M. plumosa*! For of course, now is the time when this prefers to send up its little blossoms to snuggle so comfortably amongst its feathery plumes and delight us with its sweet fragrance. And look at *M. hahniana* with a complete circle of starry pink blossoms! Did it mistake the season? I think not, for this is not the "old lady" we saw in the spring; this one has fine white spines and matted short white hair, which will grow long eventually—I hope! Amongst the hair is a ring of thick white tufts of wool and in the centre of each either a pink bud or a fully open blossom.

The plant next to it, looks as though it could belong to the *Hahniana* group too. It has no name, but is labeled S. & G. MEX. and was evidently found during a plant hunting expedition to Mexico. Isn't it a beautiful plant. Each year at this time the thick tufts of wool appear, but no buds and no flowers. One day it will surprise me, but in the meantime it just sits and looks decorative, growing more and more woolly and hairy.

JULY. No new ones this month, we could hardly expect any, but in spite of the lack of sunshine a few brave blossoms peep out here and there when the sun does break through. But haven't they done splendidly? There have been flowers right through the year, and each month, with the exception of April May and July, has brought some new plant into bloom.

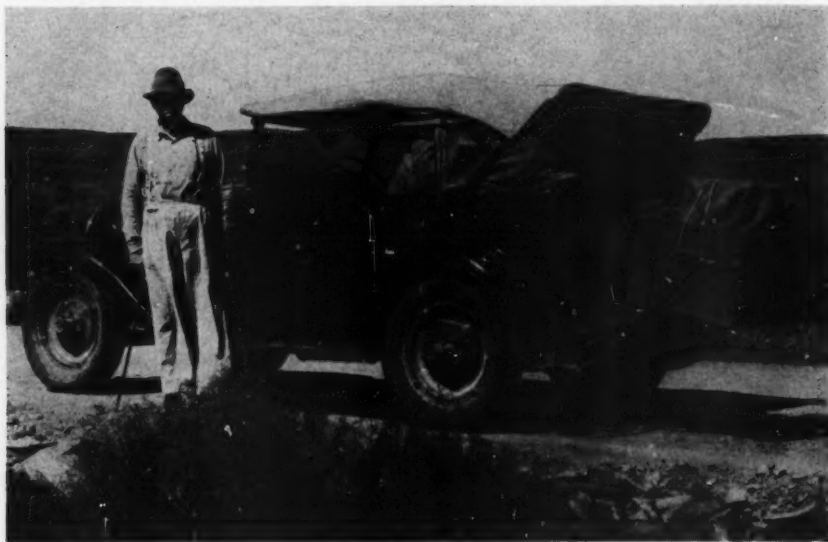


FIG. 33. H. Herre collecting for the University Botanical Gardens, Stellenbosch, South Africa.

ODE TO A MOTOR CAR

Succulent collecting trips without a motorcar are impossible to-day. Trains and motorcycles are of no use for such trips since the former has to stick to the rails while the latter has insufficient loading capacity. I already noticed this more than thirty years ago, when we decided to build up a good succulent collection at Stellenbosch. During the years 1929 and 1930 when I undertook collecting expeditions into Namaqualand on behalf of the University, lorries were used. I realized that I had to purchase a motorcar, if I wanted to collect succulents in the Karroo and Little Karroo. Early in 1930 I had the opportunity of buying one of the first 6-cylinder models of the Chevrolet touring car. After I had learned driving and received the necessary drivers license, I made my first trip into the Little Karroo, where I collected succulents near Barrydale, Ladismith, Calitzdorp, Oudtshoorn, Prince Albert, etc. It was such a success, that I undertook another trip to Clanwilliam and Vanrhynsdorp in June 1931, where I collected a wealth of plants amongst which there were a number of new species. In 1933 and 1939 and again in 1949, 1954, 1955 and 1956 extensive collecting trips to Namaqualand e.g. the Richtersveld, Kommaggas, Bushmanland, etc. followed and in spite of the fact, that my touring car was not a lorry, ample material, with quite a number of new species among it, was collected. This was only possible because I could reach the plants in the veld by

car, after which they were conveyed to Stellenbosch by train. To reach the Richtersveld one has to travel about 600 miles before one can start collecting. I left Stellenbosch usually with six caskets of petrol, each with eight gallons, since there were only a few filling-stations en route. The caskets and tins were later used for transporting plants. Thus the car had to carry a good load during the whole trip and I had to fortify both the springs and the carrier. Sometimes I returned with sacks of plant material on the mudguards and along the sides, so that every space was used.

At that time the roads were not tarred, but corrugated all the way. In the Richtersveld there are no roads at all, but only tracks and often one has to use a riverbed as road. Sometimes there are layers of stones in these tracks resembling steps which the car has to overcome. But despite everything, the Chevrolet behaved wonderfully throughout nearly *three decades* of service, and I have never had a serious breakdown.

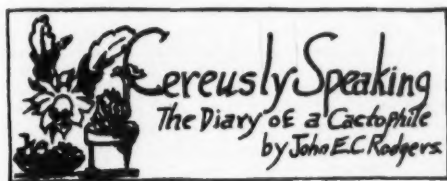
After the war, the crownwheel and parts of the gearbox had to be replaced, but fortunately I could get spares even though it took me a few weeks. Then the old car was fully intact again. At present it has done more than 95,000 miles and the machine has not yet been opened or rebored. This shows that General Motors Ltd. who have produced this car, used the best material available. In the worst regions of the Richters-

veld, especially in the ill-famed Hellsloof with its steep, corrugated and badly eroded mountain tracks with their short, blind corners, which one has to do in low gear, the machine always developed enough power to overcome these setbacks. Till to-day the old car has proved to be of special value under these difficult circumstances.

During the past 30 years about 300 new plants were described from the collections in our Botanic Garden of the University of Stellenbosch and the largest part of which has been collected with the aid of my old car. Botanists who knew this fact told me that the car should never end up on the scrap heap but should be placed on top of the dangerous Hellsloof in the Richtersveld as a monument in memory of General Motors!* Of course the machine has always been kept well, serviced duely and I rarely drove it faster than 45 miles, otherwise it might not have stood up to the difficulties mentioned above, but would have been a wreck like all its "brothers and sisters" long ago. At Stellenbosch it is at present the oldest car which is still in daily use. Neither at Stellenbosch nor in the vicinity any other car of this type is still to be seen. In Namaqualand and in the Karroo I met people who came to shake hands with me in order to show their appreciation for the fact that the old car is still in such a good condition as far as look and performance are concerned. But, of course the Old Touring Car was never in a collision! All this reassures me that I will still use this car for many a year!

H. HERRE

Adv. no charge! Lucky Dr. Herre doesn't have one of the latest models. S.E.H.



I am sure that you'll all agree that "cutting" time is any time, or it is when the cutting is given to you if you have the real urge to propagate succulents. I've been growing plants from cuttings since the year 1928 "when I didn't know any better". I rooted two when they were given to me in September 1928 and they grew. Since then I have accepted cuttings at any time and with few exceptions the plants are still alive.

Yes sir, I could have missed several good plants if I'd have listened to some of the directions given for the benefit of us lay members: 1. Cuttings should be ripened growth. 2. See

that rooting medium is well drained and never wet. 3. Take cuttings at the beginning of the growing season. 4. Use sand and peat moss but not nitrogeous (humus) rooting compost. 5. Cuttings should be calloused first. 6. Keep rooting pan out of direct sunlight. 7. Be sure cuttings are right side up when placed in the rooting medium. 8. Pot as soon as rooted.

There are others but I am sure that some of you have a like list which you have regarded most religiously until an unorthodox moment showed you that there are exceptions.

My cutting boxes of sand, leaf mold, sand and leaf mold, sand and perlite, puffed mica, puffed mica and sand, and puffed mica and leaf mold, are full of cuttings the year around. The majority of these are not ripened growth and the rooting medium is frequently too wet or too dry humus and the cuttings have not been calloused before hand.

I do try to get at least two cuttings which shows that I'm still not totally converted to my methods. However, I'd still be refusing cuttings when offered if I left the opportunity go by when cuttings were offered.

Most of my epiphytes have been rooted in clean glasses containing water and kept in good light until rooted. Recently I fill tin cans with maple leaf humus and insert the fresh cuttings in it. Punch a few holes near the bottom and keep moist. I've had excellent luck so far with both methods.

Several epiphytes have a tendency to rot, according to the donors, so I turned the cutting upside-down and set them at a slight angle. They rooted and produced fine new growth. Strong light and sunlight does not seem to bother them in our locality.

I've found that *Aporocactus* which does not respond to such methods usually take root when the stem is laid on the soil. Frequently a cutting can be tied to a stick so that the cutting just touches the soil. Another method is to make a pocket of sand about the calloused end of the cutting in a pot of soil. Once in a while I bury the cutting in sand if it has a tendency to dry out, until it shows it prefers to grow and not die. A glass jar over the cutting also prevents drying back.

Cuttings are a challenge to me. I have received them from friends all over the country and each is a challenge. The person who is not afraid to try new methods may have some losses but with experience the losses are less and less and it is a great satisfaction to pull a cutting through to a mature plant.

John E. C. Rodgers
1229 E. 8 St.,
Lorain, Ohio

NEWS FROM THE RESEARCH BOARD

The Research Committee is pleased to announce that the plant distribution will be carried on, as a regular feature, by Mr. Jay Dodson. Please address all inquiries and orders for plants to Jay W. Dodson, 921 Murchison Dr., Millbrae, Calif.

If you will send a self-addressed and stamped envelope, you will receive a complete plant list of the many rare and valuable species that will be available in the near future. As the number of plants of each species is limited, orders will be filled in the order in which they are received.

We would like to mention again that your support of this project will enable the Committee to secure and to offer many new and hitherto unobtainable plants.

LIST OF PLANTS NOW BEING OFFERED TO MEMBERS

This first list under the new plant distribution arrangement will consist mainly of plants of the Cactaceae Family. The other succulents must grow further and these will be listed in future issues of the Journal. The charges will be fifty cents for each plant, unless otherwise marked, to cover expenses. Please inclose this amount with your order and be sure and send several alternate choices. If you would like to have your plants sent by air mail, please send twenty-five cents extra for each plant. A self-addressed stamped envelope will bring you a list of plants that are being propagated for future offerings.

The plants offered in this list are surplus materials from the Botanical Gardens, University of California, through the co-operation of Mr. Paul Hutchison, Senior Botanist, or from the private collections of Mr. Myron Kinnach, Mr. Al. Irving, Mr. Tom Juul and Mr. Jay Dodson.

JAY W. DODSON
921 Murchison Dr.
Millbrae, Calif.

Plant distribution number precede each item.

CS-1U. *Werckleocereus imitans* Kinnach & Hutchison. UCBG 52.1083. Costa Rica, General Valley on the west face of the Talamancas Range, near the site Canas. This is material from the living type plant. The species was illustrated in this journal (28, 5: 152-156, 1956). An unusual epiphytic species with deeply lobed stems as in *Epiphyllum anguliger* Haw.

CS-2U. *Epiphyllum cartagense* (Weber) Britt. & Rose. UCBG 52.1097. Costa Rica, near Cartago, finca Las Concavos, C. H. Lankester. This material is from the clone used to illustrate the species in the Cactus and Succulent Journal of America, number 1 of 1958, Icones Plantarum Succulentarum 11..

CS-16U. *Hylocereus guatemalensis* (Eichl.) Britt. & Rose. UCBG 53.511. Guatemala, Province and city of Escuintla, M. Birdsey No. 313B, collected south from the city near the cemetery. Differs from descriptions of this species in having non-glaucous stems, areoles up to 5 cm. apart, and outer tepals green with maroon apices.

CS-79U. *Werckleocereus tondusii* (Weber) Britt. & Rose. UCBG 52.1079. Collected by C. H. Lankester on Pacific Coast. General Valley, Costa Rica.

CS-80U. *Bolivivocereus samaipatanus* Card. var. *divimiseratus* Card. UCBG 53.505. Bolivia, Dept. Santa Cruz, Chiquitos, Cerro San Miserato, 900 m. alt., January 1952, M. Cardenas No. 4569, the type collection. \$1.00.

CS-81U. *Castellanosia caineana* Card. UCBG 53.508. Bolivia, near Lagunillas, Dept. Santa Cruz, 1200 m. alt., February 1952, M. Cardenas No. 4392, from the type locality. \$1.00.

CS-82U. *Cleistocactus strausii* (Heese) Backeb. var. *fritzi* Doerfl. UCBG 55.260 F. Ritter No. 68. Exact

locality not known. Bolivia. The varietal name appears to be unpublished. \$1.00.

CS-83U. *Espositoa lanata* (H.B.K.) Britt. & Rose. UCBG 53.123. Peru, Dept. Piura, Prov. Huancabamba, Huancabamba, collected by Harry Blossfeld. This is the type locality for the species.

CS-84U. *Espositoa lanata* (H.B.K.) Britt. & Rose. UCBG 55.267. Peru, Dept. Ancash, Prov. Huaylas, Canon del Pato. F. Ritter No. 166. Some authorities have called this a new variety, but no one has published a new name for it as yet. It has been listed in a catalogue as var. *nana*.

CS-85U. *Espositoa melanostele* (Vaupel) Borg. UCBG 55.265. Peru without specific locality. F. Ritter No. 144a. In a catalog listing seed of Ritter's collection this was called var. *rubripina*, but the name has never been published.

CS-86U. *Eulychnia acida* Philippi. UCBG 55.421. Chile, Prov. Coquimbo. Dept. Ovalle, Ovalle, F. Ritter No. 232.

CS-87U. *Eulychnia iquiquensis* (Schum.) Britt. & Rose. UCBG 52.593. Chile, Prov. Antofagasta, Dept. Taltal, Sierra Esmeralda, ca. 3 km. north of Planta Esmeralda in the quebrada leading to the playa, 200 m. alt., P. C. Hutchison No. 421. With long spines and silky white hair, this is the most beautiful cereus of Chile. A number of forms of it have been given catalog names by Ritter. \$1.00.

CS-88U. *Haageocereus* sp. aff. *acanthus* (Schum. ex Vaup.) Backeb. UCBG 55.266. Peru, Dept. Ica, Prov. Ica, "Ica." F. Ritter No. 146.

CS-89U. *Haageocereus turbidus* Rauh & Backeb. UCBG 56.140. Peru, Dept. Ica, Prov. Nazca, above Nazca, F. Ritter No. 182. This species has been listed in recent catalogues as *pyrrhostele*, and in earlier catalogues it has been called *markianus*. In seedling stages the spination is red.

CS-90U. *Horridocactus horridus* (Remy) Backeb. UCBG 52.510. Chile, Prov. Aconcagua, between Llai Llai and San Felipe, ca. 25 km. southwest of the latter, 5 km. west of Ocampo on steep north-facing hillside, 520 m. alt., P. C. Hutchison No. 121.

CS-91U. *Neoporteria senilis* (Phil.) Backeb. UCBG 55.636. Chile, without specific data, but common in Dept. Coquimbo. F. Ritter No. 221.

Neoporteria subgibbosa (Haw.) Britt. & Rose. Chile. This species is the type of the genus. A number of races have been described as species, which are here treated as a single species, those of Prov. Valparaiso and Prov. Aconcagua being most typical. Considerable variation may be noted in spine formation and coloration in the plants of the various collections following.

CS-92U. *P. C. Hutchison* No. 308. (UCBG 52.545). Prov. Aconcagua, Zapallar, coastal slopes, especially on rocks near the shore.

CS-93U. *P. C. Hutchison* No. 319. (UCBG 52.551). Prov. Coquimbo, ca. 10-15 km. north of Los Vilos.

CS-94U. *P. C. Hutchison* No. 451. (UCBG 52.601). Prov. Coquimbo, 10 km. east of Los Vilos along the road to Illape. .75c.

CS-95U. *P. C. Hutchison* No. 314. (UCBG 52.674). Prov. Coquimbo, 20 km. south of Los Vilos. .75c.

CS-96U. *W. Hurtwig*. (UCBG 54.141). Prov. Aconcagua, Zapallar.

CS-97U. *Trichocereus* sp. UCBG 56.506. Argentina without specific locality. F. Ritter No. 429.

CS-98U. *Trichocereus chilensis* (Colla) Britt. & Rose. UCBG 55.644. Chile, without specific locality. R. Ritter No. 228a.

CS-99U. *Trichocereus chilensis* (Colla) Britt. & Rose. UCBG 52.555. Chile, Prov. Coquimbo, Dept. Ovalle,

ca. 5 km. northeast of Ovalle, 350 m. alt., *P. C. Hutchison* No. 330.

CS-100U. *Trichocereus litoralis* (Johow) Looser. UCBG 54.107. Chile, Prov. Aconcagua, Zapallar. W. Hartwig. \$1.00.

CS-106J. *Gymnocalycium bruchii* (Speg.) Backeb. A miniature species whose clustered stems resemble those of a *Rebutia*. One of the most attractive species.

CS-107J. *Gymnocalycium "marsoneri"*. No such name listed in any book. Listed in Winter's catalog (No. 83B), under garden-collected seed.

CS-108J. *Gymnocalycium mazarense* Backeb. A variable, thickly spined species with pinkish flowers, not commonly grown. Winter No. 84A.

CS-109J. *Gymnocalycium damii* (Schum.) Britt. & Rose. A popular species with prominent tubercles and numerous attractive flowers.

CS-110J. *Gymnocalycium "occultum"* Fric. Probably a synonym of *G. quechuanum* var. *stellatum* (Speg.) Dolz, a low-growing brownish stemmed plant.

CS-111J. *Gymnocalycium saglionis* (Cels) Britt. & Rose "var. *albispinum*". An unpublished variety, collected by Ritter (No. 51), of one of the most popular *Gymno*'s.

CS-112J. *Gymnocalycium schickendantzii* (Web.) Britt. & Rose. A spiny, pinkish flowered species. Winter No. 100.

CS-113J. *Gymnocalycium hossei* (Haage Jr.) Berg. A species closely related to *G. schickendantzii*. Winter No. 78.

CS-114J. *Gymnocalycium* sp. From Cordoba, Argentina. Collected by Ritter (No. 430).

CS-116J. *Parodia tilcarensis* (Werd. & Backeb.) Backeb. A seldom grown rather rare species with orange flowers and dense spination.

CACTUS AND SUCCULENT SOCIETY OF CALIFORNIA, INC.

The January 12, 1958 meeting was held at the San Antonio Park Auditorium, Oakland, Calif., and was called to order at 2 P.M. by President Anna Genasci.

Ralph Hillery, Chairman of the Oakland Garden Show Committee for our society, reported that members had been busy transferring the society's plants to their new home at Mrs. Naunetti's place, and getting them in shape for use at the Oakland Spring Garden Show.

Plants were shown and discussed by Al. Irving and Jay Dodson. Amongst those displayed were, *Lithops optica* var. *rubra*, *Aeonium simsii*, a new *Crassula* sp. from the St. George Distr. South Africa, and a new *Othonna* species also from South Africa.

Mr. William Mott of the Oakland Park Department presented a detailed plan of the new Oakland Garden Center. This is an unique undertaking and could well become a pattern for other cities, with the result that there could well be an increased interest in succulent plants. It is proposed to make available to our society, ample room for a permanent outside planting and display garden for Cacti and other succulents; an adequate space in the new modern glasshouse now under construction, for display of specimen plants that need protection and a work space and display space in a new lathhouse. This display is primarily for public interest and education. Our society will furnish the plant material and see to their upkeep and display. The Park Management will assume responsibility for guarding it, and maintenance such as weeding and watering, under our direction. Other societies such as those interested in Begonias, Camellias, Chrysanthemums, Dahlias, Roses, Herbs, etc., will have similar arrangements, so that the

entire Garden Center will represent what clubs, societies, individuals and organized groups are doing with plants and plant materials.

The Park Department plans to spend well over \$250,000.00 on this project, part of which will be by subscription of the various interested groups. In addition to the floral displays, there will be a Garden Center Building with several rooms seating from 100 to 200 persons each. These rooms will be available for lectures and also as a society or club meeting place, the latter on a permanent basis. This entire plant will cover about two acres in the Lake Merritt area of downtown Oakland. It is expected that the project will be completed by October of this year. More of this and what plants our society will display at a later date.

The February 9 meeting was held at the San Antonio Park Auditorium, Oakland, with President Anna Genasci presiding. A number of interesting plants were displayed and discussed by Mr. H. M. Butterfield, Mrs. H. O. Schutz, and Mr. R. Hillery. Mr. Myron Kinnach brought some seldom seen plants including such species as *Cotyledon buchholziana*, and *Neoporteria taltalensis*, the latter in flower.

Mr. Paul Hutchison, Senior Botanist at the University of California Botanical Gardens, who has just returned from a six months collecting trip in South America gave a talk, illustrated with colored slides, of his trip. Mr. Hutchison collected plants and covered an area that extended from Northern to Southern Peru, including the beaches, mountains and jungle areas. In addition he visited Bolivia on a field trip with M. Cardenas.

While his main purpose was to collect Peruvian Cacti, he collected other material as well, including specimens of the Orchid and Fern Families. Seed and living material from his trip now enriches the Botanical Gardens of the University at Berkeley.

One of the interesting localities visited was the Lomas or cloud gardens of Peru. In these areas there is seldom rain, but rather drenching of fogs. This is the habitat of the dwarf cacti *Pygmaecereus*. It is interesting to note that the flowers of this Cacti are night blooming.

A number of native artifacts were displayed, as well as living plant material. The plant material included what is probably a form of *Opuntia floccosa*, more recently described as *Tephrocactus rauhii*. There was also an *Oreocereus hendricksenianus*, but from Nazca, a rather unusual place for this species. Most interesting was a new *Matucana* or rather *Borzicactus* of globular form, that in appearance was more like a *Gymnocalycium*. Only a few of the some 2600 slides that were taken on this trip were shown, but it was a wonderful opportunity to see, in color, so much of the flora of Peru and Bolivia.

J. W. Dodson, *Affiliate Secretary*.

FIELD TRIP

The Los Angeles Cactus and Succulent Society extends an invitation to all members and friends of the Cactus and Succulent Society of America, Inc. to join with them in a two day field trip to Joshua Tree National Monument over the Easter weekend, April 5th and 6th.

Camping area is registered at the Sheep Pass Camping Ground. L.A. Cactus & Succulent Society signs will indicate the location after entering the Monument. Those attending must bring their own fire wood, water, etc. Motels are available at the towns of Joshua Tree and Twenty Nine Palms for those not desiring to camp. A Saturday night program will be arranged and Easter Services will be provided Sunday morning at the camp grounds.

Wm. Bentley, Secretary
6234 Bear Ave.
Bell, Calif.

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.



Question: I received a Moon Cereus (*Eriocereus martinii*) in the spring. It is now 37 in. long. May I cut the top off and root it? When will it bloom?

MRS. JOSEPH H. GRIFFITH, Pa.

Answer: The top may be cut off and rooted quite easily. Cut at least 6 in. long and place in a fairly dry, light place of 3 weeks or more to allow the cut area to heal over. Nothing is gained by planting immediately and it may rot. Roots originate in the woody tissue which you will see as a small circle in the center of the stem. It has strands leading off to each of the areoles where the spines and buds are found. The roots may show at the base of the cut which is the most common method or in some cases below the areoles. This takes some time depending upon the time of year and amount of heat. In normal kinds of plants drying out of a cutting is generally fatal but rushing a cactus cutting can be just as fatal. In winter the cutting may take a long time to root. Bottom heat of 75° to 80° will hasten the process.

Question: About two years ago I bought a Lemon Vine (*Pereskia pereskia*). This summer we put it outside where it flourished. It is now in a south window but the leaves turned yellow and dropped. I would appreciate any help you could give.

MRS. W. C. SCHAR, N.J.

Answer: The *Pereskias* are practically all deciduous during the dry season in nature. This is the way they survive the unfavorable periods of the year. They are mostly fairly woody plants and do not have much succulent water storage tissue but do have normal often slightly succulent leaves with far too much transpiring surface to survive the long dry seasons. Many grow into fairly large trees 30 feet or more tall. They are not cactus-like in appearance and except for the presence of very spiny areoles would not be taken for cacti. A friend who was searching for a particular species in Cuba during the dormant period discovered it promptly when he leaned against it. In cultivation they generally drop their leaves in winter when growth slows down the plants reacting to our shorter days, an unfavorable growth period, in somewhat the same way as to decreasing moisture.

Question: (1) Yesterday, Feb. 11, I started to repot my cacti. There was a silvery powder in

spots in the soil which I thought might be Root Mealy Bug but I saw no actual bugs. The plants look very healthy. (2) Does repotting at this time stop blooming? (3) I have read where the pot should not be too large. When I take the plants up most of them have very large roots for the size of the plants. My question is should the plant fit the pot or roots? (4) How do I get good loam soil that does not harden? I use "top soil," sand, leafmold and charcoal and it still hardens after watering.

MRS. GLADYS M. THORPE, Cal.

Answer: Sounds like Root Mealy Bug. Wash the roots clean and dip in a rotenone or pyrethrum spray such as Rotex or Red Arrow. Cactus roots are not harmed by Malathion spray but Succulents are often badly injured. Spread the roots out in a light, dry place for a few days until the broken roots heal and then repot in clean pots. (2) Repotting in spring does not stop the flowering. If done properly it often greatly increases the number of flowers. (3) I am inclined to fit the pot to the roots. Many cacti have large fleshy roots, as *Lobivia famatimensis*, while the tops may be comparatively small. Small pots are safer for the beginner as overwatering is more easily controlled. Larger pots, if watering is done carefully, will give much more growth. (4) Good friable loams are hard to find in many parts of our country. If you are near mountains you can often find good sandy loams near the mouths of the canyons particularly in the West. If you cannot locate such loams any good brown or black loam can be used. A good mixture open enough for cacti could use 1 part brown peat moss, 1 part coarse clean sand, 1/2 to 1 part of coarse leafmold, 3 parts top soil with some granulated charcoal. Under ordinary good culture cacti are not very demanding about soil. Trouble comes from overwatering the clayey soils.

Question: What is the nature—the mechanism of self-sterility in cacti. Does the pollen tube go down the style and reach the ovules or is there something antagonistic on the stigma which stops the growth of the pollen tubes in their tracks, so to speak.

W. S. CHAPIN, M.D., Mich.

Answer: Actually probably little experimental work has been done on self-sterility in the Cactaceae. Quite probably the studies on other plants would apply equally to them. There is great variability in the family ranging from cleistogamy in such genera as *Frailea* to dioecism in *Opuntia*. Many cacti are protogynous or gynandrous the stigma being receptive long before the stamens mature their pollen. Many species protrude the stigma before the perianth opens. In many of the stamens are motile so that when an insect lands among them they close on it thoroughly dusting it. The motile stamens are

generally on flowers that open flatly and may basically be a protection against rain damage as many of these flowers close at night. Many other cacti are quite self-fertile as some *Rebutias*. Others, though the stigma and pollen mature together, seldom if ever produce seed unless cross fertilized from another clone or seedling. Examples are *Echinopsis*, *Zygocactus*, *Selenicereus*, *Hylocereus*, *Parodia* and probably a large proportion of all other genera. In these there is probably an inhibiting factor. Quite probably the enzymes produced by the growing pollen tube which normally dissolve and assimilate their way through the style do not work against the tissues of the plant which produced them. They may germinate on the stigma but probably never get near the ovules. Strasburger states that in some *Orchids* self-pollination causes the flower to promptly die which would suggest they are allergic to their own pollen.

SPOTLIGHT ON ROUND ROBINS

Fortunate it is we have spring, coming as it does every year, to lift our spirits with renewed interests, for what would a year be without spring, or a spring without our round robins, which are as perennial. There is great activity now and Robins are no exception.

New members for various Robins include Mr. Harry Barwick, Hales Corners, Wisconsin; Mr. A. B. Wells, Bryn Athyn, Pennsylvania; Mrs. Alvin Elrod, Gainesville, Georgia; Mrs. Henry Wilson, Middletown, Connecticut; Mr. Fred G. Knowlton, Colorado; Mrs. Elodie Gardner, Weedville, Pennsylvania; Mr. J. Robert Walton, Shreveport, Louisiana; Mr. Dan Lynch, Upland, California; Mrs. Mildred Wellbaum, Oregon; Mr. Gilbert H. Taylor, Oklahoma.

More members would be most welcome in the new Hybridizer's Robin, to get it off to an early start, and the Window Sill Robin which has already taken flights in January. The latter is open to those with even tiny collections. Let me know if you would like to join either of these. Let me say in regard to our Robins that you have nothing to pay except the postage—there are no dues.

Regretfully, though, I have had to set aside inquiries for joining our Robins from those who have excellent collections but do not yet belong to our C. & S. Society. It is the one requirement necessary when wishing to be placed in a Robin, and worth it for the joy a Robin brings. One member remarked that "he parted with it (his first Robin) regretfully, while aware it would come again", and that, I think, is the nicest thing about Robins, like spring they always come again but oftener.

Gleaning through International Mammillaria R. Robin I found the subject was first plants and Marion Turnock, from England, was saying, "My husband bought me a small bowl containing three plants in 1951. I still have the original two, *Mam. gracilis*, a beautiful plant with snow-white spines which looks as if it is covered with lace (more striking than *M. gracilis* var. *fragilis* which I have) and *M. bocasana*, which because I did not know how to treat it, stopped growing, and when it commenced growing again, it had a waistline. I was advised to behead it and root the nice round top, but I was too timid to attempt such a chancy operation. Now I have a lovely plant whose waistline is quite invisible because she has lots of offsprings nestling all around her. She flowers beautifully, and is quite one of my favorites." Rea Hanson, in New Zealand, said, "I don't remember

my first plant or if I still have it, but one I got in the early days was a seedling of *Mam. bombycina* about one and a half inches high. That was nine years ago, and today it is at least ten inches high. For seven years it just grew taller—no signs of offsets—but in the last two years it has made four offsets. It is a lovely plant, flowering from late winter right through the summer." She also added, "I am limiting myself to white spined or hairy *Mams*, gold spined or very colored ones. As it is I have over a hundred, and with a number of them going into bigger and bigger pots, you can guess space is a bit of a problem." Julia Free said, "Having grown up in So. Texas, I have been cactus conscious all my life, but Powder Puff (*M. bocasana*) is my favorite. It beats them all blooming." June Albert, Director of this Robin, said, "After reading that *Mams* never grow too large for the house, I decided they were for me. I bought eleven. None have flowered yet. My first cactus was not really a cactus, but I thought it was! It was a *Stapelia gigantea*." Those *Mams*, she chose and has only had about a year include *Mams. bocasana*, *campotricha*, *elongata*, *elongata schmolli*, *fragilis*, *heyderi*, *hahniana*, *plumosa*, *tetracantha*, *werdermanniana*, *zeilmanniana*.

In Winter—Hardy Cactus Robin No. 1, Ethel Karr speaks of summer care, saying, "I like to water and keep them growing through the summer. Normally they are dormant through the hot part of the season, but with water they would grow longer and when they are growing I like them best." For a vase outdoors all the time she suggests "an *Opuntia* as a better cactus for this use. They would hang down but not spread all over as when put into the ground. I have used them that way. Use a native *Opuntia* and see how it makes out. I betcha you would be surprised." Many plants were listed as hardy but with a cover to keep the plants dry during the winter. To this Roy Vail remarked, "I do not think a plant is really hardy unless it can be left out winter after winter without a cover", yet in the colder climates, if a bed is covered, it allows some cacti to get through the winter safely as Irma Huch reports from Illinois. She states, "One of the most hardy for me is *Hamatocactus setispinus*. *Homalocephala texensis* is equally hardy and some of my plants have been in the covered bed as long as nine years". Not all agree with her on the hardiness of certain plants but each one lists many really hardy cacti which had, as John Daily wrote, "survived a seven inch rainfall of eight hours, uncovered and unprotected. On several occasions they were covered by snow and ice. It should be remembered the bed is about eighteen inches deep and mostly gravel and sand, with one third soil, and seems to dry out with a small amount of sun". He lives in Indiana. Gilbert Taylor, from Oklahoma, says, "I don't know how many plants I have but roughly say I have over a thousand individual plants with probably 350 species and varieties represented. I keep some of the so-called 'hardy' cactus in the greenhouse as they do better and live longer for me in pots. Especially those from the deserts of Texas, New Mexico and Arizona, which have to be kept dry in winter". He mentions variations in *Neobesseyia missouriensis*, native there, saying, "They are from either single heads to clusters 18" in diameter, with several variations in size of heads, length of spines, central spines and no central spines, and the flowers vary from a light yellowish color to a dark brownish rose." From Will Carr, in England, who just joined this Robin because of his interest in *Opuntias*, and whose list appears to be of a most impressive length, we learn, "I just decided to concentrate on *Opuntias*. My first one was a *microdasys* rescued from an indoor window ledge where it must have been for years just not dead". Some three months later he had rooted it and now after two years "it is a well padded plant". Ella Nipper, in Illinois, gives a nice suggestion for those who want to give the

hardy cacti a special place. She says, "Most of my hardies are planted in aluminum strawberry beds and the beds are built up higher than the ground level. They all survived without protection".

From here and there in other Robins are a number of interesting items. Arthur Wells, in International Robin No. 1, says, "I decided to build a cold frame and try to winter some of my cacti in it. The results amazed me for *Rebutia senilis*, *Chamaecereus silvestrii*, *Echinopsis eyriesii* and *multiplex* which had grown well but never bloomed indoors for years, bloomed well after being kept in the cold frame without heat or water from mid October to mid May. I lost only a few cacti by freezing and *Botrytis* rot to which cacti seem to be much more susceptible at low temperatures". Agnes Hirschinger, in the same Robin, gives her method of wintering her plants, which you might tuck away for future reference. "I am again wintering everything on the window sills of a south-facing room of a centrally heated apartment, with the heat turned off in that room and the windows open at top and bottom just enough to keep the air circulating over and around the plant, even in the coldest weather, during the daytime. At night I put newspapers between them and the glass when it is very cold, otherwise put the windows down or move the plants to the floor under the window shelves. I stopped watering in late October, as last year, and have given only three sprayings on warm days since, but shall cut even this as soon as it gets really cold except for those plants that shrink unduly. Of these last, the *Echinocereus* stay without water or spray until spring". Bill Weber, of the C. & S. Robin No. 3, mentions the summer care of his plant. "I keep my plants out of doors during the warm months, so they can get all the sunshine available and rain as it comes. They are placed so they are shaded by a tree for a couple of hours around noontime. Occasionally they need extra water between rains. If pots are well drained so the water can escape easily there is

not too much danger of them getting too much". Mary Alice O'Connor, of the same Robin, thinks perhaps "disturbing plants does help them. Several of mine that were not growing I uprooted and they are better." From Rose White in Succulents Only Robin, a caution as she says, "Be sure to keep your 'Stone Faces' for a long while even after they look very dried up, for they may just be dormant and just might send out some new growth from the center of the dried leaves when their growing period starts. Some grow in the winter and rest in spring, and others start growth in the spring and rest in the fall. To be safe, you have to keep your plants about a year after you think they are dead".

To end this report here is Bernice Curnow's account of her holiday, only a part of which I am able to include. It is taken from International Robin No. 2 and the place is Southern Australia. "The first afternoon I was in Melbourne, to the Botanical Gardens where they have a very interesting display of mainly succulents, and the better types are kept under cover. They had some lovely Agaves and some very nice Euphorbias. In a glasshouse I saw quite a few plants of *Testudinaria elephantides*. One huge plant of it in an outside planting weighed approximately 600 pounds and is supposed to have been brought here sixty years ago. The next day I visited a garden, not a large one, but every space was taken up with plants and it was a glorious sight. A wonderful display of *Haworthias*, beautifully grown. Next I visited the most perfectly grown plants I shall ever see. You would have to see to believe. *Pilocereus palmeri* nearly to the roof of the glasshouse, which is built on top of the workshop and plants certainly pay dividends. Huge pots of *Mammillarias*; *Lemaireocereus Beneckii* had grown so much it had to be topped off a few times; *Oreocereus celsianus* so huge and really out of this world; *O. Trollii* perfection; *Echinocereus galorei*; *Ferocactus* and some that I'll never own. They were

Concluded in Page 64



You mentioned in your Journal some time ago that *Lophophora williamsii* was easy to flower. I have two of them and one flowers most of the time while the other never flowers. The one that flowers is well-tufted while in the other, the tufts are reduced to mere pin-points but the plant is slowly "pupping" and spreading. I have had these plants since about 1930. Some say this plant is not *L. williamsii* but *L. Ziegleri* and others say it is *L. williamsii crestata*. If it is a crest, it is only shown by the spreading roots; the heads are normal except for the absence of tufts.

ALBERT W. LANE, England



SPINE CHATS

LADISLAV CUTAK



Proteolytic enzymes are tools which have been used in medicine and industry for hundreds of years. The early use of these enzymes was largely empirical because rarely did the processors realize that proteolytic enzymes were involved in the arts which they practiced. An excellent example of the unwitting use of proteases is the bating of hides in which raw hides are soaked in lime pits to plump the leather, make it softer, and to render it more permeable to tanning agents. An old, seasoned lime pit teems with organisms liberating proteolytic enzymes which are largely responsible for the bating action. Meat has always been tenderized by proteolytic enzymes. The largest use for plant proteolytic enzymes is in "chill-proofing" beer. Proteolytic enzymes have many interesting applications in medicine. Inhabitants of tropical countries use plant proteases, such as fig latex, papaya latex and pineapple juice, to digest round worms. They also apply plant proteases to suppurating wounds, a technique which is used today in many hospitals. Although proteolytic enzymes are widely distributed in plants, micro-organisms and animals, only a few sources contain a high enough concentration of protease to be used commercially. Since 1951 the Chemistry Department at the Pineapple Research Institute of Hawaii and several of the pineapple companies have been studying a new enzyme mixture which can be isolated from the pineapple plant, and have been producing this enzyme on a pilot plant scale. A great number of Bromeliaceae contain appreciable quantities of proteolytic enzymes and this protease has been given the name *stem bromelain*. Pineapple stem bromelain could become the most important plant protease used in the United States. For more details see *Economic Botany* 11: 225-234, July-September 1957.

Dr. E. Yale Dawson discovered a couple of new bromels on the Machris Brazilian Expedition in 1956. These were named by Dr. Lyman B. Smith and published in *Contributions in Science*, No. 17, of the Los Angeles County Museum (December 23, 1957). Both are *Dyckias*, which should lend themselves nicely to desert gardens or potted succulent collections. *Dyckia dawsonii* honors the Expedition's botanist and although the technical floral characters place it next to *D. niederleinii*, in leaf character it is

strikingly similar to *Encholirium bradearum*. The second species, *D. macbrisaniana*, was collected in open grassland and mature specimens bear linear-triangular leaves in a rosette with a simple lax sparsely pale lepidote inflorescence with dark blackish orange blossoms.

Dr. Lyman B. Smith continues to publish regional treatments of the family Bromeliaceae. His latest, *The Bromeliaceae of Colombia*, was published as Volume 33 of the *Contributions from the National Herbarium* in 1957. This paper-bound monograph of 311 pages records 392 species of the pineapple family and briefly gives an account of the important collectors who have contributed to the knowledge of the Bromeliaceae in Colombia. The known Colombian species have practically doubled since Mez monographed the whole family as recently as 1935.

Dr. Norman H. Boke of the University of Oklahoma has done considerable work on the anatomy and growth development of various cacti in past years. His latest study, "Structure and Development of the Shoot in *Toumeyia*," appeared in the *American Journal of Botany*, vol. 44, no. 10, 888-896, Dec. 1957. He has found that the leaves of *Toumeyia papyracantha* are vestigial and as much reduced as those of the mammillarias. *Toumeyia* also has an abundance of large mucilage cells in the tubercles and cortex which is characteristic of the Echinocereaceae rather than of the Echinocactaceae to which group *Toumeyia* is generally assigned. With respect to monomorphic areoles and the pattern of spine initiation, it resembles a *Coryphantha* in the juvenile stage of development, before areole grooves have appeared. Buxbaum (1951) has placed *Toumeyia* at the beginning of the *Strombocactus* line of development which leads to such oddities as *Ariocarpus*, *Obregonia* and *Leuchtenbergia* but Boke thinks that there is a strong case for placing *Toumeyia* near the gland-bearing coryphanthas.

In the fourth number of volume two of *Cactaceae v Succulentas Mexicanas* (1957), Prof. Fizi Matuda describes a new species of bromel from Mt. Ovando in Chiapas, Mexico. He has named it *Vriesia ovandensis* from its locale. It is a stemless bromeliad with ligulate-lanceolate

leaves forming a loose rosette and bearing a simple inflorescence of 13 to 17 greenish yellow flowers. This is only the second species discovered in Chiapas. Most of the *Vriesias* come from the humid forests of Brazil and Colombia but their range extends into Central America and southern Mexico.

In the December 1957 issue of the *National Cactus and Succulent Journal* (England) a new genus of Cactaceae has been validated by Backeberg and its type, *Pygmaocereus bylesianus*, established. Harry Johnson first used the generic name in his 1955 catalog and illustrated *Pygmaocereus akersii* therein which, according to Backeberg, might become a second species.

ROUND ROBINS — from Page 62

just too wonderful and not a mark or blemish on them anywhere. The next day I saw another huge collection of about 1500 plants with massive *Astro. ornatum* and capricorn; Mams. in all their glory; dozens of *Echicactus grusonii*, *E. strausii* and others. The following day I went to visit another collection set in about two acres approximately, and what a sight! *Ferocactus* 5' high, *Pilocereus polylophus* towering above the house, row on row of lovely *Cereus Strausii*, huge clumps of *Euphorbias*, *Cereus senilis* easily 8' high with large offsets. Great plants and a real paradise. Came home very weary but thoroughly enjoyed trip."

I wish there were more time and space available to get other worthy items in, but all you who would like to know what Robins are like will have to join one to find out, I am afraid. Do write to me if interested.

(Mrs.) GLADYS H. PANIS,
P. O. Box 705, Falmouth, Massachusetts

ORANGE COUNTY CACTUS-SUCCULENT CLUB

The meeting dates of this club have been changed from the fourth Sunday of the month to the second Thursday. At the Jan. meeting the following officers were elected and installed. Helen Collins of Costa Mesa was reelected president; Joe Woodruff, of Orange, Vice Pres.; E. Grove Teaney of Anaheim was elected Secy. and Treas.; Harry Marshal of Laguna Beach was the installing officer and did a fine job of it. The club plans many activities for this year, one is to again have a display booth at the Orange County fair this spring. In May we are to be hosts to the Long Beach Cactus Club, and the meeting and picnic dinner will be held at the home of Gladys Vernon at 621 W. Wilson St. in Costa Mesa. Then in June we are to be the guests of a picnic dinner of the Long Beach club at the Armstrong home in Silverado Canyon. Our club is a healthy club and at each meeting take in new members.

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A NEW BOOK

At last we have a brand new book by Claude Chidamian who dared to write a popular book on both cacti and the other succulents. Most of us would say that it can't be done but this book will surprise you both in the helpful information and the accuracy of the drawings and the names of the plants. The main chapter heads are: Introducing succulents; Understanding succulents; The cactus family; Other succulent families; Succulents in the home; Succulents in the garden; Collecting, propagating and buying; Maintenance; Pests and diseases; Books about succulents. There are 22 pages of excellent drawings of 220 subjects and plants, 14 pages of photos, and 4 pages in color. The book contains 258 pages and is beautifully printed. There is a colorful jacket and title page. Published by Doubleday and Company. Available from Abbey Garden Press, 132 W. Union St., Pasadena, Cal., \$4.65 postpaid. (California sales please add 18c sales tax).

BACK VOLUMES OF THE CACTUS JOURNAL

Many readers are asking for a price-list of the back issues so we are publishing it again. Some ask for the contents of each issue but this is impossible since it would make a 300-page book in itself. The following prices are unbound. Please add 20¢ per volume for postage. (Supplements have been removed.)

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